

# SDMS US EPA Region V

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## QUESTION 21

STATUS OF ENVIRONMENTAL COMPLIANCEAIR

The boilers at Angell were converted from coal to gas and oil. As a result of this change, the Michigan DNR has given their tacit approval of the air quality. No tests have been run on the emissions from the boilers. Corporate Engineering has indicated that no permits are required to operate the boilers using the present fuels.

WATER

The Angell Mill discharges non-contact cooling water and the backwash from the sand filters to the Kalamazoo River through two outfalls. These outfalls are licensed under NPDES Permit M10029386 which expires February 28, 1988. The mill has been in compliance with the conditions of this permit as noted in the Technical Director's memo to the DNR dated May 3, 1984 with the exception of submitting some additional water analysis. This analysis is underway and the results will be submitted in the near future.

All process effluent is sent to the City of Battle Creek wastewater treatment plant. This plant is in the process of being upgraded and expanded and there is more than enough capacity for industrial expansion in the Battle Creek area. Until the end of March 1986, the Angell Mill has the contractual right to utilize the following capacities of the plant:

Flow	2.5 million gallons/day
Solids	5000 lbs/day
BOD	3250 lbs/day

After March 1986, the capacities reserved for the Angell Mill will be as follows:

Flow	5.0 million gallons/day
Solids	10,000 lbs/day
BOD	6,500 lbs/day

Because the mill does not require such capacities and their exclusive use costs about \$144,000/year, negotiations are currently underway with the city to reduce the 1986 capacities by the amounts required by the Fountain street mill formerly owned by St. Regis.

Considerable efforts and capital have been expended by the mill personnel to reduce the effluent discharges and recycle process water. The progress achieved to date is shown in the attached figures. Average loadings achieved by the mill at this time are:

Flow	1.2 million gallons/day
Solids	8,000 lbs/day
BOD	3,200 lbs/day

The industrial contract rates for use of the City's treatment plant were implemented in September 1983 and are summarized below:

Fixed Capital Charge	\$ 2,336.50/mo.
New Capital Charge	3,363.50/mo.
Monitoring	250/mo
Loading charges:	
Flows	\$ .77/ccf
BOD greater than 300 ppm	.05/lb.
Solids " " "	.07/lb.
Penalty Charges for exceeding	
Capital allocations:	
Flow	\$35.81
BOD	36.36/1000 lbs/day
Solids	29.81/1000 lbs/day

Additional reductions in effluent will require considerable capital expenditures. Some kind of holding system must be installed to provide for storage during upsets in the operation.

#### PERMIT TRANSFER

As with the Fountain Mill of St. Regis sold to Field Container, no problems are expected in transferring the permit to a new owner.

#### SOLID WASTE

The sludge from the fiber cleaning systems and other wastes from the mill are hauled to landfill by a local company by the name of Waste Management. The mill generates about 3840 cubic yards of material annually and the present disposal costs are \$30,000/year. The installation of a sludge dewatering system will reduce the solid waste costs considerably.

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LOUISIANA  
PAPER COMPANY

79 E Fountain Street  
Battle Creek Mich 49016 963-5511

May 3, 1984

Jeff Braunscheidel  
Michigan DNR  
301 East Glick Highway  
Jackson State Office  
Jackson, Michigan 49201

Dear Jeff:

We talked by phone of several items concerning the NPDES permit (no. 0029386), for the St. Regis Angel Mill. This is a follow up of that conversation.

1) There are two persons currently certified by the Water Resource Commission for operation of a waste treatment facility at Angel Mill. The certification is in the classification of A-2f and B-2a. Persons with this certification are:

Duane Dohse, no. 2587

Jon Hamelink, no. 2604

Both of these were issued earlier this year. At this time there is one additional person to take the State test for similiar certification.

2) Special Condition #4: This concerns the concentration of additives in the discharge stream and the limits. These are:

<u>ADDITIVES</u>	<u>DAILY MAXIMUM mg/l</u>
Nalco 19	2.6
Nalco 353	.26
Nalco 356	26.0
Nalco 7220	26.0

-2-

Actual water analysis have shown the concentration of the materials to be under the limits for products 19, 353 and 356. Results were reported as less than 2.5, less than 0.1, and less than 1.0 ppm respectively. Mass balance calculation may be questionable due to product transformation. Therefore, additional water analysis is underway on the effluent stream. This can be reported, Jeff, when we receive it.

The information on Transport-Plus, or Nalco 7200 can be passed on as it is made available to us. The attached information from the supplier is the extent of what is readily available, with the exception of toxicity data that was sent in February. The actual product formulation is proprietary. If additional information is required, you should contact Nalco directly.

3) Special Condition #6: A short term waste characterization study on TRC. The study will soon be redone with use of the spectrophotometer method. Thanks for the reference names which can be used if we need some additional input.

4) Section 10, Part 11-A, provisions at the plant dealing with power loss. In the event of a power outage, flows will stop. Water cannot be pumped from the river for clarification, sand filters cannot be backflushed, and the backflush cannot be pumped to the lamella. Gravity discharge would take the route of the sanitary sewer.

It is hoped that the above will meet the requirements that we have discussed.

Jon D Hamelink

JDH/jef

Attached: Information on 7200

cc: T. Myers  
R. Cash

**Power Generation  
Chemicals**
**Product  
Bulletin**

**TRANSPORT-PLUS™  
7200**
**BOILER  
FEEDWATER  
TREATMENT**
**Product Benefits.**

- Essentially noncorrosive to boiler internals
- Helps inhibit scale formation and resultant tube failures
- Can reduce deposits, resulting in more efficient heat transfer, energy savings, and fewer acid cleanings
- Effective antifoam can reduce foaming in the boiler to ensure excellent steam quality
- Available in bulk quantities for easy application

**Principal Uses**

TRANSPORT-PLUS 7200 is a liquid all-organic noncorrosive boiler feedwater treatment used for

maximum scale inhibition and internal metal passivation. Suggested maximum use pressure is 1500 psi.

**General Description**

TRANSPORT-PLUS 7200 is a specially formulated blend of synthetic organic polymers and antifoam in liquid form.

<b>Color</b>	Light yellow
<b>Odor</b>	Slightly ammoniacal
<b>Density (@ 77°F)</b>	9.7 lb/gal
<b>Viscosity (@ 77°F)</b>	55 cp
<b>pH (Neat)</b>	10.2
<b>pH (1% Solution)</b>	8.8
<b>Freeze Point</b>	26°F
<b>Freeze-Thaw Recovery</b>	Complete
<b>Flash Point (PMCC)</b>	None

**Handling**

**CAUTION:** May cause irritation to skin and eyes. Avoid contact with skin, eyes, and clothing. Avoid prolonged or repeated breathing of vapors. Do not take internally. In case of contact, wash skin with soap and

water, for eyes, immediately flush with large amounts of water for at least 15 minutes and get medical attention. Remove contaminated clothing and wash before reuse. Keep out of reach of children.

**Storage**

TRANSPORT-PLUS 7200 should be stored in stainless steel, mild steel, polyethylene, or fiberglass tanks. The

recommended maximum storage temperature is 120°F, recommended in-plant storage limit is six months.

**Shipping**

TRANSPORT-PLUS 7200 is shipped from manufacturing locations and regional distribution centers in 55-gallon, nonreturnable steel drums.

It is also shipped in bulk quantities from selected manufacturing locations.

(Continued on Reverse Side)

**NALCO CHEMICAL COMPANY**  
WATER TREATMENT CHEMICALS  
2901 BUTTERFIELD ROAD • OAK BROOK, ILLINOIS 60521

SUBSIDIARIES IN ARGENTINA AUSTRIA BRAZIL CHILE COLOMBIA ECUADOR FINLAND  
FRANCE HOLLAND HONG KONG ITALY PHILIPPINES SAUDI ARABIA SPAIN SWEDEN  
VENEZUELA AND WEST GERMANY • AFFILIATES IN AUSTRALIA CANADA JAPAN MEXICO  
SINGAPORE SOUTH AFRICA TAIWAN UNITED KINGDOM AND THE UNITED STATES



## Dosage

TRANSPORT-PLUS 7200 dosage will vary as a function of feedwater total acid hardness. Your Nalco

representative will recommend the proper dosage needed to help ensure maximum program performance.

## Feeding

TRANSPORT-PLUS 7200 should be fed continuously into the feedwater line. Any interruptions in feed will result in scale formation in the boiler and possible tube failure.

TRANSPORT-PLUS 7200 may be fed neat or in any convenient dilution. If diluted, cooled condensate or softened make-up is recommended as a diluent. If feedwater is used for attempteration, TRANSPORT-PLUS 7200 should be fed downstream of the attempteration water take-off. TRANSPORT-PLUS 7200 cannot be mixed with catalyzed sulfite or filming inhibitors.

Dissolved oxygen should be less than 100 ppb at the point of chemical injection for maximum performance. Deaerated feedwater containing an oxygen scavenger residual is preferred. A stainless steel quill (available from Nalco) that extends beyond the internal surface of the feedwater line should be used.

The FEEDPAC® Series B, Model FB1-110 or FB1-210, is recommended for feeding TRANSPORT-PLUS 7200. See Figure 1.

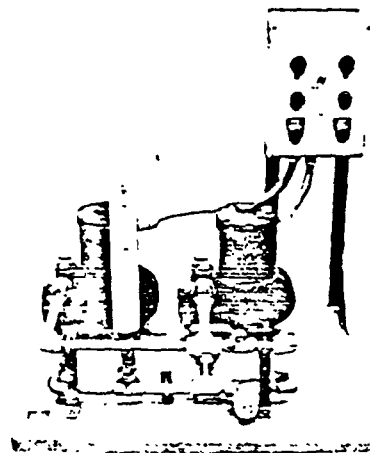
### Materials of Construction

Compatible materials of construction include 304 SS, 316 SS, mild steel,

nickel, fiberglass (DK 411), Teflon, natural rubber, polyethylene, neoprene, polyvinyl chloride, Viton, Buna-N, polypropylene, and polyurethane.

Materials that *must not* be used are aluminum, copper, brass, copper alloys, and Hypalon.

Figure 1 — Nalco FEEDPAC Series B bulk chemical feed system



## Remarks

TRANSPORT-PLUS 7200 *cannot* be used in FDA or USDA regulated plants.

STATE OF MICHIGAN



JAMES J. BLANCHARD, Governor

## DEPARTMENT OF NATURAL RESOURCES

RONALD O. SKOOG, Director

April 24, 1984


Reply To:

4th Floor  
State Office Building  
301 E. Louis Glick Hwy.  
Jackson, MI 49201

## NATURAL RESOURCES COMMISSION

THOMAS J. ALDERSON  
E. R. CAROLLO  
JACOB A. HOEFER  
STEPHEN F. MONSMA  
HILARY F. SNELL  
PAUL H. WENDLER  
HARRY H. WHITELEY

To Hamelink



Mr. Tom Myers, Resident Manager  
St. Regis Corporation  
177 Angell Street  
Battle Creek, MI 49016

Dear Mr. Myers:

Re: NPDES Permit MI0029386 (Angel Mill)

In my phone conversation of March 1, 1984 with Mr. Hamelink, I mentioned several items that were to be cleared up concerning operations at the Angel Mill. We have not yet received the information I requested.

Listed below are our concerns:

1. The wastewater treatment facilities at this plant are currently classified as A2F-discharge measuring and monitoring, and B2A-chemical clarification. You are legally required to provide an operator certified in each of these classifications. Verify that your operator is properly certified.
2. In Mr. Hamelink's letter of February 20, 1984, he refers to Special Condition 4 of the permit and mentions that he used mass balance calculations to determine compliance with additive discharge limits. We need to see the data used and how the calculations were performed to verify this.

The replacing of Nalco 7220 and 7213 by Nalco 7200 was also mentioned. It is the permittee's responsibility to supply product information before changes occur. The required information includes all active ingredients, inert materials and cross-reaction products of the constituents, mammalian or aquatic toxicological data or references which are available, and information on the rate of degradation of the product. The bulletin on Nalco 7200 that we were sent did not contain this information.

3. Special Condition 6, referred to in the same letter, deals with a short-term waste characterization study for total residual chlorine (TRC). Since the colorimetric procedure that was used is not currently acceptable, this study will have to be repeated when you begin using the spectrophotometric method that Mr. Hamelink indicated will be in operation soon. If Mr. Hamelink would like some guidance on the procedure for this type of chlorine analysis, he may contact Mr. Howard Selover or Mr. Dan Holmquist of our Community Assistance Division at (517) 373-0397.

Mr. Tom Myers  
St. Regis Corporation  
Page 2  
April 24, 1984

4. Section 10, Part II-A of your NPDES permit refers to provisions at the plant dealing with power loss. If there is a power outage, what effect will this have on the wastewater treatment facilities? What steps will be taken to prevent untreated wastewater from being discharged in violation of the permit effluent limits?

Provide us with a written response to these four concerns by May 18, 1984. Feel free to contact me if you have any questions or comments.

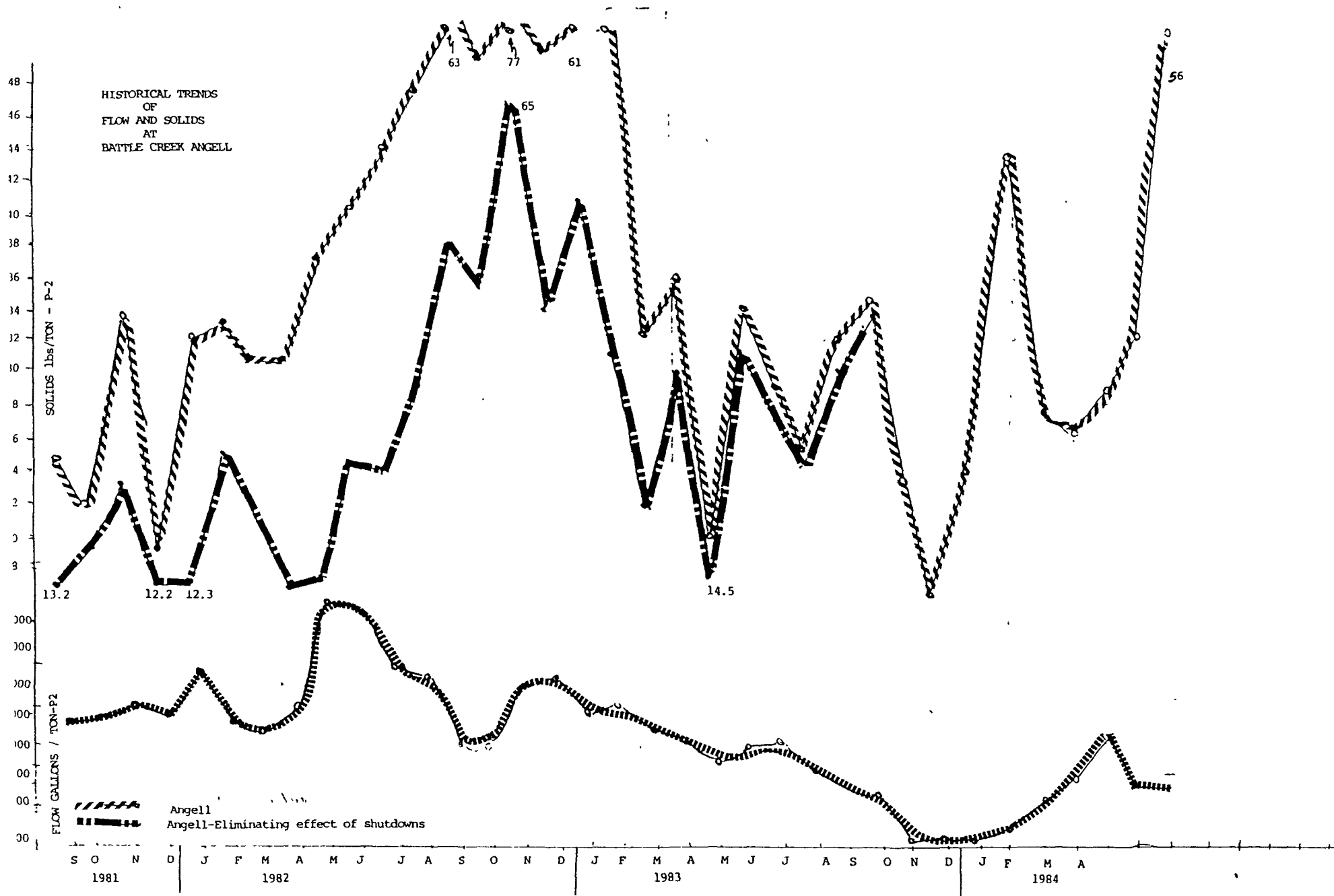
Sincerely,



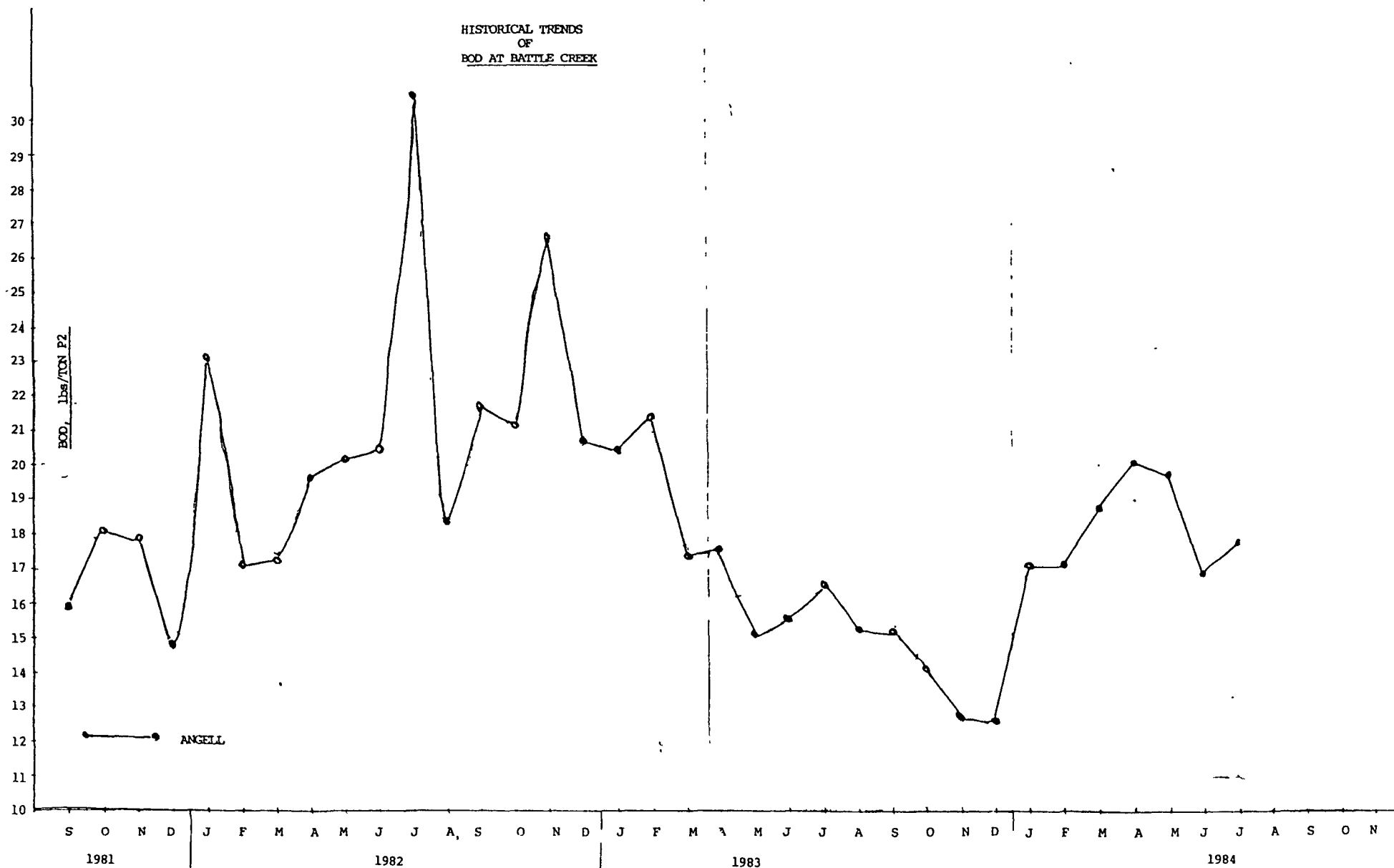
Jeffrey J. Braunscheidel  
Compliance Section #2  
Surface Water Quality Division  
(517) 788-9598

JJB:lc

cc: J. D. Hamerink, Technical Supt.



HISTORICAL TRENDS  
OF  
BOD AT BATTLE CREEK



## QUESTION 24

# MEMORY TRANSMISSION REPORT

PAGE : 001  
TIME : MAR-20-03 15:06  
TEL NUMBER1:  
NAME : ROCK TENN

FILE NUMBER : 232  
DATE : MAR-20 15:04  
TO : 917703687664  
DOCUMENT PAGES : 028  
START TIME : MAR-20 15:04  
END TIME : MAR-20 15:06  
SENT PAGES : 028  
STATUS : OK

FILE NUMBER : 232

\*\*\* SUCCESSFUL TX NOTICE \*\*\*

## Fax Cover Sheet

DATE: March 20, 2003 TIME: 2:00 PM  
TO: Mike Hagenbarth & Carla Bachunas PHONE: 770 263-4396  
Rock-Tenn FAX: 770-368-7664  
FROM: Gary Kaziukewicz cc: Lowell Knapp, Steve Mrozla, Steve  
Haselmann  
PHONE: 651-641-4709  
Rock-Tenn / St. Paul

RE: Historic Battle Creek Mill PCB Tests in Paperboard.

Number of pages including cover sheet: 28

Message:

Mike & Carla,

Here is what we were able to find concerning subject memo. Steve Mrozla performed a cover statistical analysis. Original copies to follow by U.S. mail.

Please be advised that Champion International took over St. Regis in November of 1984 and thus owned both the Battle Creek Mill (formerly Michigan Carton) and the St. Paul Mill which is where PCB in paperboard was analyzed using a electron capture Gas Chromatograph. The "new" Waldorf came into being on July 17, 1985. We do not have any data on Battle Creek PCB in paperboard data prior to March 11, 1985. We would have been a competitor of theirs prior to November 1984.

Please call if you have any questions.

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Rock-Tenn

PHONE: 770 263-4396

FAX: 770-368-7664

FROM: Gary Kaziukewicz cc: Lowell Knapp, Steve Mrozla, Steve  
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PHONE: 651-641-4709

Rock-Tenn / St. Paul

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DATA SOURCE : PAPER BOARD PCBs - BATTLE CREEK  
WALDORF ROCK TENN ST. PAUL MINNESOTA  
REGULATORY / PRODUCT COMPLIANCE LIBRARY

PCB TEST DATA FOR BATTLE CREEK PAPER BOARD

GRAND TOTAL 102 TESTS COVERING THE PERIOD 3/11/85 THROUGH 12/19/89

ppm PCB TEST DATA						test			
						event			
1985	test 1	test 2	test 3	test 4	test 5	count			1985
DATE									
3/11/85	0 1500	0 0700	0 0700	0 0900		4			
5/21/85	0 1322	0 1791	0 1227	0 1009	0 0230	5			
6/24/85	0 0302	0 1015	0 2781			3			
8/14/85	0 2381	0 1077	0 1866	0 2780		4			
9/26/85	0 1758	0 1134	0 0825	0 0551		4			
11/13/85	0 1500	0 1300	0 0400	0 1900	0 4000	5	average	high	low
				total count		25	0 1398	0 4000	0 0230
1986	test 1	test 2	test 3	test 4	test 5				1986
DATE									
2/17/86	0 0279	0 0436	0 0401	0 0634	0 0701	5			
4/4/86	0 0186	0 0520	0 1022			3			
5/23/86	0 0987	0 2247	0 0348	0 0346	0 1302	5			
7/7/86	0 0296	0 0455	0 0446	0 0643	0 0392	5			
8/12/86	0 0450	0 0455	0 0898	0 1342		4			
9/8/86	0 0559	0 0747	0 1005	0 0574		4			
10/22/86	0 0438	0 1186	0 1552	0 2877		4			
12/22/86	0 1628	0 2004	0 1081	0 2505	0 2511	5	average	high	low
				total count		35	0 0956	0 2877	0 0186
1987	test 1	test 2	test 3	test 4	test 5				1987
DATE									
2/25/87	0 2573	0 2241	0 1032	0 1889		4			
5/8/87	0 0462	0 3607	0 0908	0 1542		4			
7/17/87	0 4047	0 0988	0 1048	0 4219	0 0438	5			
9/30/87	0 0742	0 1678	0 1350	0 0431		4			
12/7/87	0 0850	0 0678	0 0266	0 1569		4	average	high	low
				total count		21	0 1550	0 4219	0 0266
1988	test 1	test 2	test 3	test 4	test 5				1988
DATE									
2/8/88	0 3531	0 2176	0 1471	0 0257		4			
4/19/88	0 0118	0 5675	0 0224	0 0503		4			
9/8/88	0 0163	0 0305	0 0282			3	average	high	low
				total count		11	0 1337	0 5675	0 0118
1989	test 1	test 2	test 3	test 4	test 5				1989
DATE									
1/3/89	0 8268	0 2325	0 4049	0 0743		4			
2/1/89	0 5262					1			
4/11/89	0 0913	0 1583	0 0275	0 0156		4			
12/19/89	0 0415					1	average	high	low
				total count		10	0 2399	0 8268	0 0156

**Champion**  
Crump International Corporation

Michael D. Minger/Battle Creek

Date

March 11, 1985

Subject

Irma Warner/St. Paul Mill

PCB Analyses  
Battle Creek Board

Received 3/7/85

Analyzed 3-8-85

84-12-19-3-3

0.15 ppm

85-1-7-3-1

0.07 ppm

Analyzed 3-11-85

85-1-25-3-2

0.07 ppm

85-2-14-3-3

0.09 ppm

Analyses performed using the FDA approved method. Board enclosed.

IW:yd

enc.

cc: Gary Kaziukewicz  
Larry Harris



**Champion**  
Champion International Corporation

To	Date:
Michael D. Minger/Battle Creek	May 21, 1985
From	Subject:
Irma Warner/St. Paul Mill	PCB Analyses Battle Creek Board

Received 5/15/85

Analyzed 5/16/85

85-3-15-3-3	0.1322 ppm
85-3-25-3-2	0.1791 ppm

Analyzed 5/17/85

85-4-13-3-1	0.1227 ppm
85-4-21-3-2	0.1009 ppm

Analyzed 5/20/85

85-5-12-3-3	0.0230 ppm
-------------	------------

Analyses performed using the FDA approved method. Board enclosed.

IW:yd  
enc.  
cc: Gary Kaziukewicz  
Larry Harris




**Champion**  
Champion International Corporation

To  
Michael D. Minger/Battle Creek

Date  
June 24, 1985

From  
Irma Warner/St. Paul Mill

  
PCB Analyses/Battle Creek Board

Received 6/17/85

Analyzed 6/20/85

85-6-9-3-3                      0.0302 ppm

85-6-10-3-2                    0.1015 ppm

85-6-11-3-1                   0.2781 ppm

Analyses performed using the FDA approved method. Board enclosed.

IW:yd  
enc.

cc: Gary Kaziukewicz  
Larry Harris



To  
Michael D. Minger/Battle Creek Mill

Date :  
August 14, 1985

From :  
[Redacted] St. Paul Mill

Subject :  
PCB Analyses  
Battle Creek Board

Received 8/9/85:

Analyzed 8/9/85

85-6-28-3-3                      0.2381 ppm

85-6-22-3-1                      0.1077 ppm

Analyzed 8/10/85

85-6-13-3-2                      0.1866 ppm

85-6-3-3-3                      0.2780 ppm

Analyses performed using the FDA approved method.

IW:yd  
cc: Gary Kaziukewicz  
Larry Harris



To

Michael D. Minger/Battle Creek

From

[REDACTED] St. Paul Mill

Date

September 26, 1985

Subject

PCB ANALYSES  
BATTLE CREEK BOARD

Received 9/24/85

Analyzed 9/25/85

85-8-21-3-1

0-1758 ppm

85-9-2-3-3

0.1134 ppm

Analyzed 9/26/85

85-9-8-3-1

0.0825 ppm

85-9-18-3-2

0.0551 ppm

Analyses performed using the FDA approved method.

yd

cc: Kary Kaziukewicz  
Larry Harris



To:  
Michael D. Minger/Battle Creek

Date:  
November 13, 1985

From:

[REDACTED] Paul Mill

Subject:  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 11/11/85

Analyzed 11/12/85

85-9-28-3-3	0.15 ppm
85-10-10-3-3	0.13 ppm
85-10-14-3-1	0.04 ppm

Analyzed 11/13/85

85-10-25-3-2	0.19 ppm
85-11-5-3-2	0.40 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris



To  
Michael D. Minger/Battle Creek

Date  
February 17, 1986

From  
Irma Warner/St. Paul Mill

  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 2/12/86

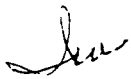
Analyzed 2/13/86

85-11-20-3-3	0.0279 ppm
85-12-7-3-2	0.0436 ppm
85-12-19-3-1	0.0401 ppm

Analyzed 2/14/86

86-1-8-3-1	0.0634 ppm
86-1-26-3-2	0.0701 ppm

Analyses performed using the FDA approved method.


  
yd  
cc: Gary Kaziukewicz  
Larry Harris



To.  
Michael D. Minger/Battle Creek

Date  
April 4, 1986

From  
Irma Warner/St. Paul Mill

  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 3/31/86

	Analyzed 4/1/86
86-2-16-3-2	0.0186 ppm
	Analyzed 4/2/86
86-3-9-3-1	0.0520 ppm
	Analyzed 4/3/86
86-3-21-3-3	0.1022 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris



To  
Michael D. Minger/Battle Creek

Date  
May 23, 1986

From  
Irma Warner/St. Paul Mill

~~Subject:~~  
PCB ANALYSES  
BATTLE CREEK BOARD

*lw*  
Received 5/21/86

Analyzed 5/22/86

86-4-2-3-3	0.0987 ppm
86-4-13-3-2	0.2247 ppm
86-4-26-3-2	0.0348 ppm

Analyzed 5/23/86

86-5-9-3-1	0.0346 ppm
86-5-17-3-3	0.1302 ppm

Analyses performed using the FDA approved method.


yd  
cc: Gary Kaziukewicz  
Larry Harris



To  
Michael D. Minger/Battle Creek

Date  
July 7, 1986

From  
Irma Warner/St. Paul Mill

  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 7/1/86

Analyzed 7/2/86

86-5-23-3-2 0.0296 ppm

86-5-29-3-3 0.0455 ppm

Analyzed 7/3/86

86-6-9-3-1 0.0446 ppm

86-6-21-3-2 0.0643 ppm

86-6-24-3-3 0.0392 ppm

Analyses performed using the FDA approved method.


yd  
cc: Gary Kaziukewicz  
Larry Harris



To  
Michael D. Minger/Battle Creek

Date  
8/12/86

From  
Irma Warner/St. Paul Mill

  
PCB ANALYSES  
BATTLE CREEK BOARD

*per Gary Kaziukewicz*

Received 8/11/86

Analyzed 8/11/86

86-7-17-3-2                      0.0450 ppm

86-7-29-3-3                      0.0455 ppm

86-8-5-3-2                      0.0898 ppm

Analyzed 8/12/86

86-7-22-3-1                      0.1342 ppm

Analyses performed using the FDA approved method.

th  
cc: Gary Kaziukewicz  
Larry Harris



To  
Michael D. Minger/Battle Creek

Date  
September 8, 1986

From  
Irma Warner/St. Paul Mill

Subject  
**PCB ANALYSES**  
**BATTLE CREEK BOARD**

Received 9/3/86

Analyzed 9/4/86

86-8-15-3-2	0.0559 ppm
86-8-22-3-3	0.0747 ppm
86-8-25-3-1	0.1005 ppm
86-8-31-3-3	0.0574 ppm

Analyses performed using the FDA approved method.


yd  
cc: Gary Kaziukewicz  
Larry Harris



To  
Michael D. Minger/Battle Creek

Date  
October 22, 1986

From  
Irma Warner/St. Paul Mill

  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 10/20/86

Analyzed 10/21/86

86-9-12-3-1 0.0438 ppm

86-9-23-3-2 0.1186 ppm

Analyzed 10/22/86

86-10-6-3-3 0.1552 ppm

86-10-14-3-1 0.2877 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris



To:  
Michael D. Minger/Battle Creek

Date:  
December 22, 1986

From  
Irma Warner/St. Paul Mill *Iwa*

Subject:  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 12/18/86

Analyzed 12/19/86

86-10-26-3-2	0.1628 ppm
86-11-3-3-3	0.2004 ppm

Analyzed 12/20/86

86-11-19-3-1	0.1081 ppm
86-12-3-3-2	0.2505 ppm

Analyzed 12/21/86

86-12-13-3-3	0.2511 ppm
--------------	------------

Analyses performed using the FDA approved method.

yd

cc: **Larry Kaziukewicz**  
Larry Harris



To  
Michael D. Minger/Battle Creek

From  
Irma Warner/St. Paul Mill

Date  
February 25, 1987

Subject :  
**PCB ANALYSES**  
**BATTLE CREEK BOARD**

Received 2-20-87

Analyzed 2-23-87

86-12-18-3-1 0.2573 ppm

Analyzed 2-24-87

87-1-3-3-2 0.2241 ppm

87-1-25-3-3 0.1032 ppm

87-2-14-3-2 0.1889 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris



To :  
Michael D. Minger/Battle Creek  
  
From :  
Irma Warner/St. Paul Mill

Date :  
May 8, 1987  
  
Subject :  
**PCB ANALYSES**  
**BATTLE CREEK BOARD**

Received 5/6/87

Analyzed 5/7/87

87-2-22-3-1	0.0462 ppm
87-3-19-3-2	0.3607 ppm

Analyzed 5/8/87

87-4-5-3-3	0.0908 ppm
87-4-30-3-2	0.1542 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris



FILE

To Michael D. Minger  
Battle Creek

Date July 17, 1987

From Irma Warner - St. Paul *JW*

Subject PCB ANALYSES - BATTLE  
CREEK BOARD

Received July 13, 1987

Analyzed July 14, 1987

87-5-15-3-1	0.4047 ppm
87-5-27-3-2	0.0988 ppm

Analyzed July 15, 1987

87-6-13-3-3	0.1048 ppm
86-6-22-3-1	0.4219 ppm

Analyzed July 16, 1987

87-7-8-3-2	0.0438 ppm
------------	------------

Analyses performed using the FDA approved method.

IW/lkb

cc: Gary Kaziukewicz  
Larry Harris



To  
Michael D. Minger/Battle Creek

Date  
September 30, 1987

From  
Irma Warner/St. Paul Mill

Subject:  
PCB ANALYSES  
BATTLE CREEK BOARD

Analyzed September 29, 1987

87-7-25-3-2	0.0742ppm
87-8- 6-3-3	0.1678ppm
87-9- 8-3-1	0.1350ppm
87-9-18-3-2	0.0431ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris



To  
Michael D. Minger/Battle Creek

Date  
December 7, 1987

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 12/2/87

Analyzed 12/4/87

87-9-29-1 0.0850 ppm

87-10-12-2 0.0678 ppm

Analyzed 12/7/87

87-10-25-3                      0.0266 ppm

87-11-29-2 0.1569 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris



To  
Michael D. Minger/Battle Creek

Date February 8, 1988

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 2-3-88

Analyzed 2-5-88

87-12-11-2 0.3531 ppm

87-12-27-3 0.2176 ppm

Analyzed 2-8-88

88-1-13-1 0.1471 ppm

88-1-29-2 0.0257 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz



To:  
Michael D. Minger/Battle Creek

Date  
April 19, 1988

From:  
Steve Carlstrom/St. Paul Mill

Subject:  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 4/13/88

Analyzed 4/14/88

88-2-22-3 0.0118 ppm

88-3-1 -2 0.5675 ppm

Analyzed 4/15/88

88-3-16-3 0.0224 ppm

88-4-7 -1 0.0503 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Irma Warner



FILED

To  
Michael D. Minger/Battle Creek  
From  
Irma Warner

Date  
September 8, 1988  
Subject  
**PCB Analyses  
Battle Creek Board**

Received 9/7/88

Analyzed 9/8/88

88-6-28-2	0.0163 ppm
88-8-1-1	0.0305 ppm
88-8-30-3	0.0282 ppm

Analyses performed using the FDA method.

yd  
cc: Gary Kaziukewicz



To  
Michael D. Minger/Battle Creek  
From :  
Jeff Martens -  
Brian Walukiewicz/St. Paul Mill

Date :  
January 3, 1989  
Subject :  
PCB Analyses  
Battle Creek Board

88-12-15-1	0.8268 ppm
88-11-25-2	0.2325 ppm
88- 9-29-2	0.4049 ppm
88- 9-12-3	0.0743 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Irma Warner



To

Jim Coleman

From

Irma Warner

Date

February 1, 1989

Subject

PCB ANALYSES/BATTLE CREEK BOARD  
PLATE STOCK RAN 1-20-89

Received 1-31-89

Analyzed 2-1-89

0.5262 ppm

Analyses performed using the FDA approved method.

yd



To  
Michael D. Minger/Battle Creek

Date  
April 11, 1989

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 4/7/89

Analyzed 4/10/89

89-1-8-3                      0.0913 ppm

89-1-27-1                    0.1583 ppm

Analyzed 4/11/89

89-3-20-2                    0.0275 ppm

89-3-30-1                    0.0156 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz



To:

George Seiter

From:

Irma Warner/St. Paul Mill

Date:

December 19, 1989

Subject:

PCB ANALYSES  
BATTLE CREEK BOARD/ANGELBRITE 60

Board made 12/2/89 for C.C.A.

Extraction from thirteen samples

0.0415 ppm

Analyses performed using the FDA approved method.

yd

cc: Gary Kaziukewicz



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

April 8, 1988

S.D. Meyers  
ATTN: Mr. John Esker  
180 South Ave.  
Tallmadge, OH 44278

Dear Mr. John Esker:

On 4-6-88 your firm was contracted to clean up a PCB oil spill at our river pump station. Upon completion of the work, Mr. Thomas Crocker filled out a M.D.R. Hazardous Waste Manifest after which he took all copies except the blue and goldenrod. The blue copy was to be kept by your people and then signed and dated by the T.S.D. facility and returned to Waldorf Corporation. I am sending this copy to you so that the above mentioned can be completed. Also, the white original was to remain with Waldorf Corporation so, I am requesting that you return it to my attention. If you have any questions, please feel free to call.

Sincerely,

A handwritten signature in dark ink, appearing to read "Paul H. Stofer", is written over the typed name.

Paul H. Stofer  
Technical Director

PS/lw

# GENERAL ELECTRIC

CLEVELAND APPARATUS SERVICE SHOP • APPARATUS AND ENGINEERING SERVICES  
GENERAL ELECTRIC COMPANY • 4477 EAST 49TH STREET • CLEVELAND, OHIO 44185  
ANY HOUR REPAIR SERVICE . . NIGHTS, SUNDAYS AND HOLIDAYS . . Phone (216) 883-1000

Waldorf Paper

177 Angell St.

Battlecreek, MI 49016

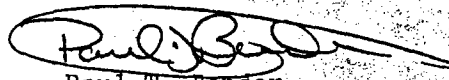
Attention: Steve Weers

Gentlemen:

Attached please find your Generator copy of Manifest # 00901  
for PCB materials received and signed for the Treatment Storage or  
Disposal Facility (TSDF), dated June 30, 1988.

Certificates of disposal will be forwarded as soon as received  
from the TSDF. Thank you for the opportunity to be of service, if  
you have any questions please call us at the above number.

Yours very truly,



Paul T. Bender  
PCB Facility Supervisor

**DNR**  
MICHIGAN DEPARTMENT  
OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE

ATT. ☐ DIS. ☐ REJ. ☐ PR ☐

1978, as amended and Act 136 PA  
1969  
Failure to file is punishable under  
section 299 548 MCL or Section 10 of  
Act 136 PA 1969

Please print or type

Form Approved OMB No 2050 0039 Expires 9 30 88

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1 Generator's US EPA ID No <b>MI E 2 7 0 0 1 3 7 5 8</b>		Manifest Document No <b>000001</b>		2 Page 1 of 1		Information in the shaded areas is not required by Federal law	
3 Generator's Name and Mailing Address  <b>STEVE WEERS</b> <b>WAADORF PAPER</b> <b>177 ANGELL ST.</b> <b>BATTLECREEK, MI 49016</b>		6 US EPA ID Number <b>0 H D 0 0 4 5 2 7 0 0 8</b>		7 State Manifest Document Number <b>MI 1049869</b>		8 State Generator ID			
4 Generator's Phone ( <b>616</b> ) <b>963-5511</b>		8 US EPA ID Number		9 State Transporter's ID		10 State Transporter's Phone			
5 Transporter 1 Company Name <b>GENERAL ELECTRIC COMPANY</b>		10 US EPA ID Number		11 State Facility's ID		12 Facility's Phone			
7. Transporter 2 Company Name									
9 Designated Facility Name and Site Address <b>GENERAL ELECTRIC COMPANY</b> <b>4477 EAST 49TH STREET</b> <b>CLEVELAND, OHIO 44126</b>		10 US EPA ID Number <b>0 H D 0 0 4 5 2 7 0 0 8</b>		13 Total Quantity <b>0 5 0 0 0 P</b>		14 Unit <b>P</b>		15 Waste No. <b>0 6 2 1</b>	
11 US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER) <b>HAZARDOUS SUBSTANCE, LIQUID, N.O.S., ORM-E</b> <b>NA9188, RQ, (POLYCHLORINATED BIPHENYLS)</b>		12 Containers <b>0 0 1 C M</b>		13 Total Quantity <b>0 5 0 0 0 P</b>		14 Unit <b>P</b>		15 Waste No. <b>0 6 2 1</b>	
Additional Descriptions for Materials Listed Above		K Handling Codes for Wastes Listed Above							
15 Special Handling Instructions and Additional Information <b>DIKE AND CONTAIN SPILLS, AVOID SKIN CONTACT, GE REF# 60891</b>									
16 GENERATOR'S CERTIFICATION I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment. OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford		Printed/Typed Name <b>Steve Weers</b>		Signature <i>[Signature]</i>		Date Month Day Year <b>10 7 01 82</b>			
17 Transporter 1 Acknowledgement of Receipt of Materials		Printed/Typed Name <b>F. J. ...</b>		Signature <i>[Signature]</i>		Date Month Day Year <b>10 7 01 82</b>			
18 Transporter 2 Acknowledgement or Receipt of Materials		Printed/Typed Name		Signature		Date Month Day Year			
19 Discrepancy Indication Space									
20 Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19		Printed/Typed Name <b>Paul T. Bender</b>		Signature <i>[Signature]</i>		Date Month Day Year <b>10 7 01 82</b>			

CUS #36125000  
SO #83-1066



**MICHIGAN DEPARTMENT  
OF NATURAL RESOURCES**

**DO NOT WRITE IN THIS SPACE**

ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

required under authority of Act 67, 1978, as amended and Act 136, PA 1969  
Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, PA. 1969.

Please print or type.

Form Approved OMB No. 2050-0039 Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address <b>WALDORF CORP.</b> <b>177 Angell St. / Battle Creek, MI 49016</b>		6. US EPA ID Number <b>01E12900130578</b>		A. State Manifest Document Number <b>MI 1178540</b>	
4. Generator's Phone ( <b>616</b> ) <b>963-5511</b>		8. US EPA ID Number <b>01E12900130578</b>		B. State Generator's ID	
5. Transporter 1 Company Name <b>S.D. Myers</b>		10. US EPA ID Number <b>01E12900130578</b>		C. State Transporter's ID	
7. Transporter 2 Company Name				D. Transporter's Phone	
9. Designated Facility Name and Site Address <b>S.D. Myers</b> <b>180 South Ave.</b> <b>Tallmadge, OH 44278</b>				E. State Transporter's ID	
				F. Transporter's Phone	
				G. State Facility's ID	
				H. Facility's Phone	
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER). a. <b>X</b> <b>RQ (10/4.54), Polychlorinated Biphenyls, Hazardous Substance, Solid, N.O.S., ORM-F, NA9188 (Contaminated Bags, etc)</b>		12. Containers No. Type <b>1 D X</b>		13. Total Quantity <b>75 P</b>	14. Unit Wt/Vol
b.					
c.					
d.					
J. Additional Descriptions for Materials Listed Above		K. Handling Codes for Wastes Listed Above		a. / / b. / / c. / / d. / /	
15. Special Handling Instructions and Additional Information					
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR; if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.					
Printed/Typed Name <b>David L Wye</b>		Signature <i>David L Wye</i>		Date <b>11/1/88</b>	
17. Transporter 1 Acknowledgement of Receipt of Materials		Signature <i>Thomas J Crocker</i>		Date <b>11/1/88</b>	
Printed/Typed Name <b>Thomas J Crocker</b>		Signature		Date	
18. Transporter 2 Acknowledgement or Receipt of Materials		Signature		Date	
Printed/Typed Name		Signature		Date	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.					
Printed/Typed Name		Signature		Date Month Day Year	

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-4708 OR OUT OF STATE AT 517-373-7860 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

is an acknowledgment that a Bill of Lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

(Mail or street address of consignee—For purposes of notification only.)

Route \_\_\_\_\_

Delivering Carrier \_\_\_\_\_ Vehicle or Car Initial \_\_\_\_\_ No. \_\_\_\_\_

[illegible]

† The fibre containers used for this shipment conform to the specifications set forth in the box maker's certificate thereon, and all other requirements of Rule 41 of the Uniform Freight Classification and Rule 5 of the National Motor Freight Classification" †Shipper's imprint in lieu of stamp, not a part of bill of lading approved by the Interstate Commerce Commission.

Thomas Crocker Shipper, Per Agent, Per

Permanent post-office address of shipper:

This is to certify that the abovenamed materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

3



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

April 8, 1988

S.D. Meyers  
ATTN: Mr. John Esker  
180 South Ave.  
Tallmadge, OH 44278

Dear Mr. John Esker:

On 4-6-88 your firm was contracted to clean up a PCB oil spill at our river pump station. Upon completion of the work, Mr. Thomas Crocker filled out a M.D.R. Hazardous Waste Manifest after which he took all copies except the blue and goldenrod. The blue copy was to be kept by your people and then signed and dated by the T.S.D. facility and returned to Waldorf Corporation. I am sending this copy to you so that the above mentioned can be completed. Also, the white original was to remain with Waldorf Corporation so, I am requesting that you return it to my attention. If you have any questions, please feel free to call.

Sincerely,

A handwritten signature in dark ink, appearing to read "Paul H. Stofer", is written over the typed name.

Paul H. Stofer  
Technical Director

PS/lw



# MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE

ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Act 64, P.A. 1979, as amended and Act 136, P.A. 1969.

Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, P.A. 1969.

Please print or type.

Form Approved. OMB No. 2050-0039 Expires 9-30-92

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.		Manifest Document No.		2. Page 1 of 2		Information in the shaded areas is not required by Federal law.							
3. Generator's Name and Mailing Address <b>VALLEY CORPORATION</b> <b>177 AMHOL ST. BATTLE CREEK, MI 49016</b>						A. State Manifest Document Number <b>MI 2670888</b>									
4. Generator's Phone ( (616) ) <b>460-5611</b> CONTACT: <b>WILL DEVER</b>						B. State Generator's ID <b>12345</b>									
5. Transporter 1 Company Name <b>GENERAL ELECTRIC COMPANY</b>						C. State Transporter's ID <b>12345</b>									
6. US EPA ID Number <b>01010004527000</b>						D. Transporter's Phone (216) <b>883-1000</b>									
7. Transporter 2 Company Name <b>---</b>						E. State Transporter's ID <b>---</b>									
8. US EPA ID Number <b>---</b>						F. Transporter's Phone <b>---</b>									
9. Designated Facility Name and Site Address <b>GENERAL ELECTRIC CO.</b> <b>4477 EAST 40TH STREET</b> <b>CLEVELAND, OHIO 44126</b>						G. State Facility's ID <b>---</b>									
10. US EPA ID Number <b>01010004527000</b>						H. Facility's Phone <b>(216) 883-1000</b>									
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER)						12. Containers		13. Total Quantity		14. Unit		1. Waste No.		N/H	
a. <input checked="" type="checkbox"/> HAZARDOUS SUBSTANCE, SOLID, N.O.S., (M-XCHLORINATED BIPHENYLS)						606		EST		KG		0/2/0/L		H	
b. <input checked="" type="checkbox"/> HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (M-XCHLORINATED BIPHENYLS)						606		EST		KG		0/2/0/L		H	
c. <input checked="" type="checkbox"/> HAZARDOUS SUBSTANCE, SOLID, N.O.S., (M-XCHLORINATED BIPHENYLS)						606		EST		KG		0/2/0/L		H	
d. <input checked="" type="checkbox"/> HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (M-XCHLORINATED BIPHENYLS)						606		EST		KG		0/2/0/L		H	
J. Additional Descriptions for Materials Listed Above						K. Handling Codes for Wastes Listed Above						a/ /			
11a) TRANSFORMERS						R						b/ /			
11b) CAPACITORS						R						c/ /			
11c) OIL SWITCH REFERENCE EMERGENCY GUIDE 31 (ATTACHED)						R						d/ /			
11d) TANK PUMP EMERGENCY INFLAME (24 HOURS)															
15. Special Handling Instructions and Additional Information <b>WEEK AND CERTAIN SPILLS. AVOID SKIN CONTACT! BE DETAILED (SEE CONTINUATION SHEET)</b>															
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.															
Printed/Typed Name						Signature						Date			
17. Transporter 1 Acknowledgement of Receipt of Materials						Signature						Date			
Printed/Typed Name						Signature						Date			
18. Transporter 2 Acknowledgement or Receipt of Materials						Signature						Date			
Printed/Typed Name						Signature						Date			
19. Discrepancy Indication Space															
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.															
Printed/Typed Name						Signature						Date			

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

**DNR**  
MICHIGAN DEPARTMENT  
OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE  
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

1979, as amended and Act 136 PA 1969.  
Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, P.A. 1969

Please print or type.

Form Approved. OMB No. 2050-0039 Expires 9-30-92

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. <b>MI D 27001375893076</b>		Manifest Document No. <b>MI D 27001375893076</b>		2. Page 1 of 2		Information in the shaded areas is not required by Federal law.							
3. Generator's Name and Mailing Address <b>WALDORF CORPORATION 177 ANGELL ST. BATTLE CREEK, MI 49016</b>						A. State Manifest Document Number <b>MI 2670888</b>									
4. Generator's Phone ( (616) ) <b>963-5511</b> CONTACT: <b>BILL DEVER</b>						B. State Generator's ID <b>SAME</b>									
5. Transporter 1 Company Name <b>GENERAL ELECTRIC COMPANY</b>						C. State Transporter's ID									
6. US EPA ID Number <b>10H D 004527008</b>						D. Transporter's Phone <b>(216)883-1000</b>									
7. Transporter 2 Company Name						E. State Transporter's ID									
8. US EPA ID Number						F. Transporter's Phone									
9. Designated Facility Name and Site Address <b>GENERAL ELECTRIC CO. 4477 EAST 49TH STREET CLEVELAND, OHIO 44125</b>						G. State Facility's ID									
10. US EPA ID Number <b>10H D 004527008</b>						H. Facility's Phone <b>(216)883-1000</b>									
11. US DOT Description (including Proper Shipping Name, Hazard Class, and HM ID NUMBER).						12. Containers No. Type		13. Total Quantity		14. Unit Wt/Vol		15. Waste No. N/H			
a. <input checked="" type="checkbox"/> <b>HAZARDOUS SUBSTANCE, SOLIDS, N.O.S., ORM-E NA9188, RQ, (POLYCHLORINATED BIPHENYLS)</b>						002 QM		EST 067400		KG 026L		N			
b. <input checked="" type="checkbox"/> <b>HAZARDOUS SUBSTANCE, LIQUID, N.O.S., ORM-E NA9188, RQ, (POLYCHLORINATED BIPHENYLS)</b>						006 DM		EST 066000		KG 026L		N			
c. <input checked="" type="checkbox"/> <b>HAZARDOUS SUBSTANCE, SOLIDS, N.O.S., ORM-E NA9188, RQ, (POLYCHLORINATED BIPHENYLS)</b>						002 DM		EST 005000		KG 026L		N			
d. <input checked="" type="checkbox"/> <b>HAZARDOUS SUBSTANCE, LIQUID, N.O.S., ORM-E NA9188, RQ, (POLYCHLORINATED BIPHENYLS)</b>						002 TP		EST 032500		KG 026L		N			
J. Additional Descriptions for Materials Listed Above. 11a) TRANSFORMERS 11b) CAPACITORS 11c) OIL SWITCH REFERENCE EMERGENCY GUIDE 31 (ATTACHED) 11d) TANK PORT EMERGENCY HOTLINE (24 HOURS)						K. Handling Codes for Wastes Listed Above R B R						a/ / b/ / c/ / d/ /			
15. Special Handling Instructions and Additional Information <b>DIKE AND CONTAIN SPILLS, AVOID SKIN CONTACT! GE REF#61608A (SEE CONTINUATION SHEET)</b>															
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.															
Printed/Typed Name <b>Steve Denny</b>						Signature <i>Steve Denny</i>						Date Month Day Year <b>06/22/93</b>			
17. Transporter 1 Acknowledgement of Receipt of Materials						Printed/Typed Name <b>AHARDIN</b>						Signature <i>A Hardin</i>		Date Month Day Year <b>06/22/93</b>	
18. Transporter 2 Acknowledgement or Receipt of Materials						Printed/Typed Name						Signature		Date Month Day Year	
19. Discrepancy Indication Space															
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.															
Printed/Typed Name						Signature						Date Month Day Year			

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7860 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.



**MICHIGAN DEPARTMENT  
OF NATURAL RESOURCES**

DO NOT WRITE IN THIS SPACE  
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1979, as amended and Act 136, PA  
1969  
Failure to file is punishable under  
section 299.548 MCL or Section 10 of  
Act 136, P.A. 1969.

Please print or type.

Form Approved OMB No. 2050-0039 Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. MI 270013758	Manifest Document No. 9902	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address <b>STEVE WEERS</b> <b>WEADOKF PAPER</b> <b>177 ANGELL ST.</b> <b>BATTLE CREEK, MI 49016</b>					A. State Manifest Document Number MI 1049369
4. Generator's Phone ( <b>616</b> ) <b>963-5511</b>					B. State Generator's ID
5. Transporter 1 Company Name <b>GENERAL ELECTRIC COMPANY</b>		6. US EPA ID Number <b>08D004527008</b>			C. State Transporter's ID
7. Transporter 2 Company Name		8. US EPA ID Number			D. Transporter's Phone
9. Designated Facility Name and Site Address <b>GENERAL ELECTRIC COMPANY</b> <b>4477 EAST 49TH STREET</b> <b>CLEVELAND, OHIO 44126</b>		10. US EPA ID Number <b>08D004527008</b>			E. State Transporter's ID
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER) a. <b>HAZARDOUS SUBSTANCE, LIQUID, H.O.S., OHM-E</b> <b>NA9168, RQ, (POLYCHLORINATED BIPHENYLS)</b>		12. Containers No. <b>001</b>	Type <b>CM</b>	13. Total Quantity <b>5000</b>	14. Unit Wt/Vol <b>P</b>
b.					
c.					
d.					
Additional descriptions for materials listed above		K. Handling Codes for Wastes (Check boxes)			
		a/ <input type="checkbox"/> b/ <input type="checkbox"/> c/ <input type="checkbox"/> d/ <input type="checkbox"/>			
15. Special Handling Instructions and Additional Information <b>DIKE AND CONTAIN SPILLS, AVOID SKIN CONTACT, OR REF# 60891</b>					
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.					
Printed/Typed Name		Signature		Date Month Day Year	
17. Transporter 1 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name		Signature		Month Day Year	
18. Transporter 2 Acknowledgement or Receipt of Materials				Date	
Printed/Typed Name		Signature		Month Day Year	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.					
Printed/Typed Name		Signature		Date Month Day Year	

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-424-8802 24 HOURS PER DAY.



GE Power Generation

Test Apparatus Serv. Ctr.  
General Electric Company  
415 Dearborn Avenue Toledo, OH 43605  
419 691 3501

Mr. Luther McPherson  
Waldorf Paper  
177 Angell Street  
Battle Creek, MI 49015

Nov. 17, 1992

RE: Test Results

Attached, please find the laboratory results from the (2)  
oil samples taken from your substation transformers.

The results are good. The transformers' fluids are in  
acceptable condition. The actual values have degraded  
slightly from last year (also on the lab report) but some  
change year to year and sample to sample are normal.

If we can be of any further service to you, or you have any  
questions on these results, please call our toll free  
number, (800) 221-7350, anytime.

Very truly yours,

Ron Achol, Manager  
Toledo Service Center

cc 52635

COPIES:  
BILL REVEN  
PAUL SUTHER  
STEVE DANNY

GENERAL ELECTRIC COMPANY  
LIQUID INSULATION LABORATORY  
4900 KINGSTON STREET  
DENVER, COLORADO 80239  
(303) 329-2323 FAX (303) 329-2322

GE TOLEDO S.C.  
405 DEARBORN AVENUE  
TOLEDO, OH 43605  
ATTN: RON ACHOR  
P.O. # 097-53635-1

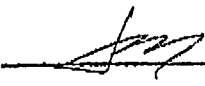
EQUIP. S/N.: 8113530  
EQUIP. TYPE.: Transformer  
MANUFACTURER: GENERAL ELECTRIC  
EQUIP. OWNER: WALDORF PAPER  
LOCATION.....: NOT GIVEN


11/11/92                      ASKAREL (PCB) ANALYSIS REPORT                      LAB JOB #: 38276-92

FLUID SAMPLED ->		38276 10/23/92	06/17/91	05/25/90	In-Service Fluid Specifications
TEST	ASTM #	Comp.	Comp.	Routine	
Dielectric Strength	D877	39	44	16	=>30 KV
Water ppm/% Content	D1523 Temp.	31	*	26	<30% SAT.
Visual Sediment	D1702	CLEAR HEAVY	CLEAR NONE	CLEAR HEAVY	Clear Slight
Color	D2129	150	200		<300 APHA
Acidity	D1534	0.015	0.045		<0.15 mg/KOH
Specific Gravity	D1810	1.556	1.542		1.52-1.62
Refractive Index	D1807	1.6177	1.6138		1.600-1.620
Viscosity	D2161	54.7	56.4		35-65 SUS

COMMENTS: Please refer to Lab Job #: 38276-92 if you have any questions.

\* WATER CONTENT = 31 PPM. NO TEMP. WAS GIVEN TO CONVERT TO % SATURATION. SEE NOMOGRAM FOR CONVERSION.

Tested by:   
(Lab Copy)

Approved by:   
Mel Wright; Lab. Mgr.

GENERAL ELECTRIC COMPANY  
LIQUID INSULATION LABORATORY  
4900 KINGSTON STREET  
DENVER, COLORADO 80239  
(303) 329-2323 FAX (303) 329-2322

GE TOLEDO S.C.  
405 DEARBORN AVENUE  
TOLEDO, OH 43605  
ATTN: RON ACHOR  
P.O. # 097-53635-1

EQUIP. S/N.: 8037218  
EQUIP. TYPE.: Transformer  
MANUFACTURER: GENERAL ELECTRIC  
EQUIP. OWNER: WALDORF PAPER  
LOCATION....: NOT GIVEN

11/11/92

ASKAREL (PCB) ANALYSIS REPORT

LAB JOB #: 38276-92

FLUID SAMPLED ->		38276 10/23/92	06/17/91	In-Service Fluid Specifications
TEST	ASTM #	Comp.	Comp.	
Dielectric Strength	DB77	35	49	=>30 KV
Water ppm/% Content	D1523 Temp.	20	*	<30% SAT.
Visual Sediment	D1702	CLEAR NONE	CLEAR NONE	Clear Slight
Color	D2129	100	150	<300 APHA
Acidity	D1534	0.015	0.03	<0.15 mg/KOH
Specific Gravity	D1810	1.552	1.548	1.52-1.62
Refractive Index	D1807	1.6169	1.6154	1.600-1.620
Viscosity	D2161	52.4	52.9	35-65 SUS

COMMENTS: Please refer to Lab Job #: 38276-92 if you have any questions.

\* WATER CONTENT = 20 PPM. NO TEMP. WAS GIVEN TO CONVERT TO % SATURATION. SEE NOMOGRAM FOR CONVERSION.  
ALL OTHER PARAMETERS MEET GE'S SUGGESTED SPECIFICATIONS FOR IN-SERVICE FLUIDS OF THIS TYPE.

Tested by:                       
(Lab Copy)

Approved by:                       
Mel Wright; Lab. Mgr.

# DETERMINATION OF % WATER SATURATION IN INSULATING FLUID

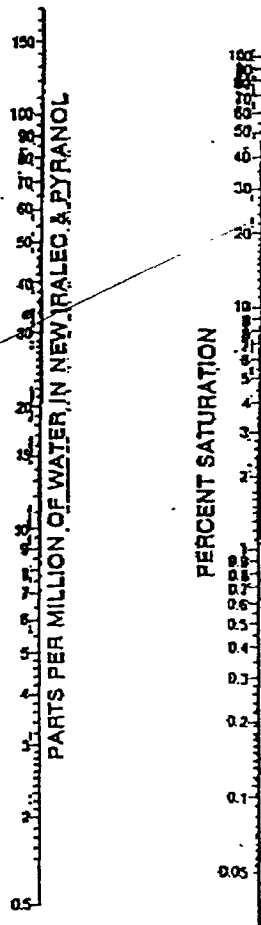
Many samples are submitted to the laboratory without identifying the oil temperature at the time the sample was taken. Although inclusion of sample temperature to the lab is preferred due to its diagnostic value, the following information will allow for the determination of percent water saturation when water content (ppm) is given by the lab and fluid operating temperature is known.

Figures 3, 4 & 5 on the <sup>THIS</sup> pages show the saturation curves (nomographs) for oil, pyranol, and silicone.

To determine the % water saturation using the nomograph, place a straight edge connecting the temperature of the oil and ppm of water. Read the value where the line crosses the saturation scale.

## THE EQUILIBRIUM STATES OF MOISTURE AIR, NEW IRALEC & PYRANOL AND INSULATING PAPER (AIA2D AND AIGIC)

To determine the % water saturation using the nomograph, place a straight edge connecting the temperature of the oil and ppm of water. Read the value where the line crosses the saturation scale.



21% SAT

Fig #3

## THE EQUILIBRIUM STATES OF MOISTURE IN AIR, NEW IO-C OIL AND INSULATING PAPER (AIA2D AND AIGIC)

To determine the % water saturation using the nomograph, place a straight edge connecting the temperature of the oil and ppm of water. Read the value where the line crosses the saturation scale.

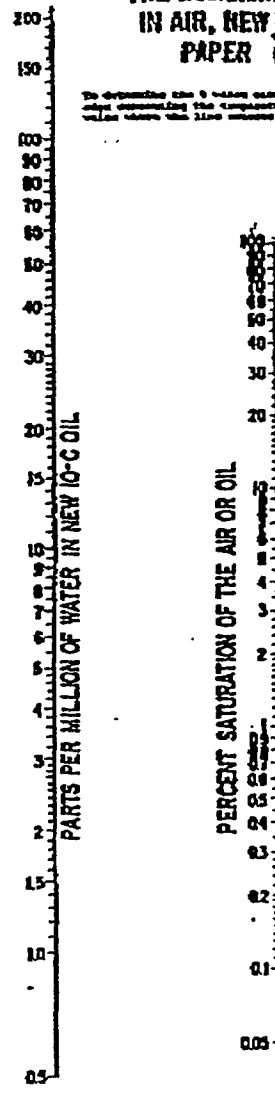


Fig #4

Inter-Office  
Correspondence

**ST REGIS**  
Corporation

From W.T. Myers, Jr.

Location Battle Creek

To Dick Cashen

cc: P. Stofer  
(attached report)

Date August 20, 1984

RE: TSCA LIMITS FOR PCB's IN WASTEWATER

Dear Dick:

In response to your letter of July 23rd, I am enclosing a laboratory report showing the amount of PCB's in our boxboard. These tests are run on a monthly basis and we have never seen any tests in the last two years over .5 ppm. We do not have any recent evaluations of the PCB's in our wastewater, but based on the analysis of our product I believe they would be negligible. Please let me know if such tests are required in the future.

Sincerely,

*W.T. Myers, Jr.*

W.T. Myers, Jr.

WIM:ih

KAR Laboratories, Inc.

219 Peckstok Road  
Kalamazoo, Michigan 49001

Telephone (616) 381-9666

ANALYTICAL REPORT

Date: June 11, 1984

Laboratory code: 84432

To: St. Regis Paper Company  
79 West Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # PM 31678-  
4013

Re: Three (3) paperboard samples received June 1, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84432 (227)	84-5-13-3-1	<0.5
" (228)	84-5-19-3-3	<0.5
" (229)	84-5-29-3-1	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

American Council on Science and Health  
47 Maple Street  
Summit, N.J. 07901



# **PCBs:** ***Is the Cure Worth the Cost?***

**A Report by the  
American Council  
on Science and Health**

Monmouth Co.  
U.S. Postage  
Summit, N.J.  
Permit No. 24

**The American Council on Science and Health (ACSH)** is a national consumer education association directed and advised by a panel of scientists from a variety of disciplines. **ACSH** is committed to providing consumers with scientifically balanced evaluations of issues relating to food, chemicals, the environment, and health. **ACSH** is a nonprofit association exempt from federal income tax under Section 501 (c) (3) of the Internal Revenue Code. All contributions are tax-deductible as provided by law.

Individual copies of this report are available at a cost of \$2.00. Reduced prices for 10 or more copies are available on request.

January 1985

Second Printing April 1985

Third Printing August 1985

Fourth Printing, Revised May 1986



Harry Wilson

Replacing, monitoring and disposing of PCBs have already cost a substantial sum of money. Future costs for removing and replacing PCB-containing electrical equipment will show up in consumers' utility bills.

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## **PCBs: Is the Cure Worth the Cost?**

This report was updated by Leonard T. Flynn, Ph.D., M.B.A., a regulatory consultant.

**The American Council on Science and Health (ACSH)** gratefully acknowledges the comments and contributions of the following individuals for one or more editions of this report:

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The opinions expressed in ACSH publications do not necessarily represent the views of all ACSH Directors and Advisors.

## Introduction

On May 22, 1984, Food and Drug Administration Acting Commissioner Mark Novitch announced that the tolerance level of polychlorinated biphenyls (PCBs) in fish would be reduced from 5 to 2 parts per million (ppm), effective 90 days later. FDA had originally proposed this action in 1977. Environmentalists and consumer groups welcomed the Novitch announcement, while commercial fishing interests claimed that their industry would suffer economic loss with no reasonable expectation that the public health would be improved. The Commissioner, in announcing his decision, voiced his opinion that "chronic exposure to PCBs in the diet posed a potential risk [of liver cancer]."

The attitudes and reactions noted above are consistent with the roles taken by each of the players in similar confrontations over other chemicals in the environment. While bona fide health considerations must take precedence over economic consequences, America's fear of chemicals in the environment seems to be fueling an escalating corrective program that is costing taxpayers billions of dollars. PCBs are symbolic of the situation. This report will try to explain why PCBs have come to center stage and address the question of whether their potential impact on our health is worth the cost of all the attention they are getting.

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## Background

PCBs, chemicals consisting of two benzene rings and two or more chlorine atoms, are a family of some 209 chemical compounds, ranging in characteristics from light, oily fluids to heavier, greasy or waxy substances. PCBs were discovered over 100 years ago and their production and use began in 1929. Because of their remarkable insulating capacity and their flame retardant nature, they soon gained widespread use as coolants and lubricants in transformers and other electrical equipment where these properties are essential. PCBs replaced combustible insulating fluids and thereby reduced the risk of fires in office buildings, hospitals, factories and schools. In fact, some city codes banned the mineral oil variety and required that all capacitors and transformers be of the PCB type. Not only did PCBs make capacitors flame-resistant, they also allowed capacitors to be made smaller, thus lowering equipment costs. Insurance companies required PCB equipment in many locations.

For several decades, PCBs were routinely used in the manufacture of a wide variety of common products such as plastics, adhesives, paints and varnishes, pesticides, carbonless copying paper, newsprint, fluorescent light ballasts and caulking compounds. It is estimated that between 1929 and 1977, about 1.2 billion pounds of PCBs were produced in the United States. There is no commercial production of PCBs in the United States at this time.

Even though U.S. production of these chemicals has ceased, an estimated 750 million pounds are still in use in this country.<sup>1</sup> PCBs are still being manufactured in some European countries, but very few of these foreign products have been imported into this country.

## How Did PCBs Get into the Environment?

Two practices thought acceptable and hazard-free in the past have led to PCB release into the environment:

- 1) Industries using PCBs in their processes and products discharged the PCB-laden wastes into rivers and streams; and
- 2) Other PCB-containing wastes were often disposed of in open landfills.

Thus, an ever increasing amount of PCBs entered our environment. In retrospect these practices, though permitted by law at the time, were inappropriate and potentially harmful procedures.

When used in transformers and electrical capacitors, PCB compartments are sealed so that the chemical remains in place for the life of the equipment. On occasion, seals have leaked or the external structure has been damaged, resulting in PCB leakage.

## Causes for Concern

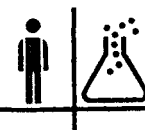
Concern about the presence of PCBs in our environment began around 1966 when results of research in Sweden revealed some buildup of PCBs. Study results confirmed suspicions that the rate of biodegradation (natural breakdown) was very slow for some of the PCB compounds.

In 1968, a widespread human poisoning episode in Japan was attributed to PCBs. In 1970, large-scale production reached a maximum, but production was voluntarily stopped soon thereafter. Monsanto Chemical Company, the sole U.S. manufacturer, discontinued production of PCBs because of the Japanese poisoning and because of additional concerns about effects on human health and the environment. During the following few years, sales of PCBs were limited to sealed systems.

There are a number of different factors which led to an increased interest in the possibility that PCBs threaten our health and environment.

First, the fact that PCBs decompose very slowly and their history of disposal routes assured that they would become ubiquitous environmental contaminants. These chemicals accumulate in the food chain and, given their relative insolubility in water and high solubility in fats, accumulate in body fat. While their persistence constitutes an environmental problem, their mere durability does not, per se, make them dangerous. This environmental hardness, however, was one of the first flags of concern.

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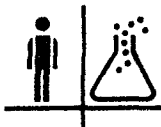
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For several decades PCBs were routinely used in the manufacture of a wide variety of common products such as plastics, adhesives, paints and varnishes, pesticides, carbonless copying paper, newsprint, fluorescent light ballasts and caulking compounds.

Second, animal experiments involving PCBs have raised some questions about possible health hazards in humans. Although PCBs have never been shown to cause immediate life-threatening effects in animals except at extremely high doses (the American Industrial Hygiene Association classifies PCBs as "slightly toxic to practically non-toxic"),<sup>2</sup> there have been some harmful physiological responses to PCBs in animal models. When PCBs are administered to rats on a long-term basis in increasing doses, there is a dose-related response reaction, from no effect, to mild, to serious irreversible liver disease.<sup>3</sup> Applying PCBs to the skin of rabbits<sup>4</sup> and monkeys<sup>5</sup> causes certain lesions to develop.

Third, recent concerns have been raised about the formation of toxic chemical compounds through combustion of fluid containing PCBs during electrical equipment fires or under inadequate incineration conditions.<sup>6-8</sup> For example, one electrical fire in the Binghamton (New York) State Office Building on February 5, 1981 resulted in cleanup expenses well in excess of the building's original construction cost due to the need to remove contaminated soot.<sup>9</sup>

## Do PCBs Cause Cancer and Other Serious Health Problems in Animals?

Many attempts have been made to answer this question. One study—which was very widely publicized—suggested that PCBs might cause an increase in liver cancer in animals. In these experiments, conducted at the Centers for Disease Control in Atlanta, rats were fed 100 parts per million of PCBs in their diet for 21 months and were subsequently reported to have a higher-than-expected incidence of liver cancer.<sup>10</sup> However, the results of this study have been questioned by many. Another study, on mice, showed only limited and restricted evidence for a carcinogenic effect of the Japanese PCB product Kanechlor 500. Doubt arises as to whether PCB causes cancer in animals because:

- 1) Other studies in the mouse and rat have failed to show an increase in liver cancer.<sup>3,11,12</sup>
- 2) One researcher re-examined the slides supposedly showing cancerous changes and failed to find any evidence of cancer.<sup>3</sup>

Why are there such discrepancies? Part of the problem arises from the methods used to interpret laboratory results. When histopathologists examine tissues under the microscope looking for cancer, they follow certain rules about how to classify what they observe. While some scientists use one set of criteria, others may use another. In the study reporting liver cancer, controversial criteria were used. In other words, certain liver cell changes that were defined as cancer may never progress to cancer. Furthermore, studies have shown that most of the tumors reported as cancer disappear when the animals are no longer exposed to the chemical. Recent scientific opinion suggests that PCBs may act as promoters, not initiators, of carcinogenesis in rodents; i.e., growth of tumors initiated by other materials is stimulated but tumors are not formed in response to PCBs themselves.<sup>13,14</sup> This understanding challenges the initial assumption that PCBs are carcinogenic in animal studies.

A comprehensive study released in 1982 by Drill, Friess, Hays, Loomis and Shaffer, Inc., a consulting firm specializing in toxicology, examined both the toxicological and epidemiological literature on PCBs.<sup>15</sup> According to their report, "Animal studies do not provide convincing evidence that PCBs induce liver cancer. Of the major studies in the rat, one has been judged positive and two have been negative." They also noted that experiments exposing dogs to PCB did not induce liver cancer and that exposure of rats did not induce bladder cancer, gastrointestinal

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A comprehensive study by Drill, Friess, Hays, Loomis and Shaffer, Inc. notes that experiments exposing dogs to PCB did not induce liver cancer and that exposure of rats did not induce bladder cancer, gastrointestinal carcinomas or cancer of the thyroid, pituitary, adrenal glands, uterus, lung or other organs.

carcinomas or cancer of the thyroid, pituitary, adrenal gland, uterus, lung or other organs.

A study of rats suggested that dietary exposure to relatively high levels of PCBs led to severe reproductive dysfunction.<sup>16</sup> However, numerous other studies in other animal species have failed to confirm this finding. The study of Drill, *et al.*, addressed the question of whether PCBs cause birth defects (teratogenicity). They concluded: "In a variety of tests, commercial PCB mixtures . . . showed no teratogenic activity in mice, rats, rabbits, and monkeys."<sup>17</sup>

The Environmental Protection Agency (EPA) has done its own review of the scientific literature on PCBs and come up with a different conclusion.<sup>18</sup> Citing the experimental evidence of a carcinogenic effect of PCBs in rodents and suggestive evidence that humans may be susceptible to a PCB carcinogenic effect, EPA concluded that PCBs are potentially hazardous to humans.<sup>19</sup>

While it is understandable that EPA prefers to err on the side of safety in protecting the public health and to support the position of its fellow agency, the FDA, the question of how much evidence is necessary (or useful) to declare absence of peril remains open. Indeed, a major review states that although "the experimental data clearly shows (*sic*) that commercial PCBs . . . cause liver damage . . . lesions are only observed after long exposures to relatively high doses of these chemicals."<sup>20</sup> Present scientific opinion does not appear to support the premise that PCBs cause cancer in laboratory animals.

## The Yusho Disease Episode

PCBs caught the public eye in 1968, when some 1,300 people on the island of Kyushu, Japan, became ill from consuming rice oil contaminated with a PCB heat-transfer agent. The victims developed a very severe and persistent form of chloracne (a severe skin rash) after eating the rice oil, which contained 2,000-3,000 ppm of a Japanese brand of PCB. The disease soon progressed to more than just skin disorders. Victims reported fatigue, nausea, and swelling of their arms and legs, and some developed liver disorders. Some babies born to exposed mothers were smaller than usual. By 1973, about 1,200 cases of "Yusho disease" had been reported as a result of this accident. By 1977, 1,665 cases had been recognized, based on symptoms of ocular disturbances, skin lesions, and primarily subjective neurological symptoms. During the 11 years following exposure, 51 Yusho patients died, with the cause of death known in 31 cases.<sup>21</sup> Eleven of the deaths (or 35.4 percent) were due to cancer. Only 21.1 percent would be expected in a control population. The media were quick to report that a toxic chemical was linked to liver cancer among Japanese exposed to PCBs.

Interestingly, in the years following the Japanese poisoning incident, it became increasingly likely that PCBs were not the cause of the illness.<sup>22</sup> It was shown that the heat transfer fluid which contaminated the rice oil contained only 50 percent PCBs. Furthermore, due to mechanical problems, a combination of high temperature and some air in the heat exchanger had converted about one-half of the original PCB fluid into materials called quaterphenyls. Beyond that, about 0.125 percent of the original PCB fluid had been converted to polychlorinated dibenzofurans (PCDFs), a family of substances which have been repeatedly shown to be much more toxic to animals than PCBs. Thus, the contamination variable in the Yusho experience limits the value of any extrapolation from that episode to United States exposure. Even without taking into account the extraordinary make-up of the heat transfer fluid which contaminated the rice oil, it is important to recognize that the PCB manufacturing process used by American plants results in less than 25 percent the PCDF level of the typical Japanese product. Most researchers who have studied the Yusho tragedy feel that it had little relevance to potential health effects from PCB exposure in this country.

Unfortunately, knowledge of the PCDFs' role in the Yusho incident came too late, as the American public

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## PCBs: A Perspective

Americans have over the past few years been presented with a contradictory array of information about the possible health hazards of PCBs. Certainly we have cause for concern when there is uncontrolled dumping of potentially toxic and possibly cancer causing agents into our rivers, streams and lakes. Not only do we run the risk of an adverse effect on human health should the levels become high enough, but we also would be endangering fish and other natural resources.

It is a source of concern when studies indicate that members of the general population—that is, people not working with PCBs—have PCB blood levels ranging from 5 to 29 parts per billion. (Non-fish eaters probably have about 5 to 10 ppb.) We still cannot be certain about the effects of PCB exposure and therefore care must be taken in the handling, disposal and general management of these chemicals.

Although this class of chemicals is indeed persistent, no evidence exists that the normal background levels or even levels among heavily exposed workers (sometimes up to 3,800 ppb) are causing damage or posing even a potential threat. PCBs are not new. They have been part of the American industrial environment for over 50 years. In a nutshell, the PCB issue requires "separating fact from fiction."<sup>41</sup>

Certainly we'd rather not have PCBs or any unwanted contaminant in our bodies. But, though the presence of a chemical warns us of a potential problem, it does not prove a hazard. In the case of PCBs, all studies to date have suggested that heroic, exceedingly expensive corrective measures are unwarranted and that time itself is an important factor in resolving the situation.



PCBs replaced combustible insulating fluids and thereby reduced the risk of fires in office buildings, hospitals, factories and schools.

was already up in arms in consideration of their own exposure. Today, even those who are most concerned about PCBs in the environment agree that it is not possible to extrapolate acute and subchronic effects of commercial PCB mixtures on humans from the Kyushu Island experience to PCB exposure in the U.S.

## Do PCBs Cause Disease in Humans?

A number of attempts have been made to detect possible increases in disease incidence among individuals who have had more than the usual exposure to PCBs. If PCBs cause human disease, including cancer, it would seem logical that signs and symptoms would appear first in groups that are heavily exposed. Yet over 50 years have passed since the first workers were heavily exposed, certainly more than ample time to detect a disease with a very long latent period, such as cancer.

The most extensive occupational studies of long-term exposure to PCBs involve electrical equipment workers. Many of these employees had daily skin contact with PCBs for many years and even inhaled relatively high levels of the chemical and probably ingested some while eating near their work stations. Aside from occasional skin irritations that disappeared quickly, no adverse health effects have been reported among workers in the electrical industry. Four studies are particularly significant:

- 1) NIOSH (the National Institute for Occupational Safety and Health) studied maintenance workers exposed to PCBs at two utility companies.<sup>23</sup> While their blood PCB concentrations were much higher than the national background level (12 to 298 parts per billion [ppb] vs. 10 to 20 ppb), they did not exhibit any ill health effects, not even chloracne.
- 2) NIOSH also studied 224 workers exposed to PCBs at an electrical equipment manufacturing plant and found PCB blood concentrations ranging from 15 to 3,580 ppb. Despite finding such high levels, again there were no ill effects noted.<sup>24</sup>
- 3) General Electric has studied the health of 194 workers heavily exposed to PCBs for an average of 15 years, some for as long as 35 years. The first report included studies done on the workers through 1976, and showed no ill effects. A 1979 re-evaluation again failed to produce evidence of ill health among these workers.<sup>25</sup>
- 4) Probably the most comprehensive data concerning the long-term health effects of PCB exposure come from a NIOSH study of 2,500 workers employed by two separate capacitor manufacturing plants.<sup>26</sup> The researchers reported no statistically significant excesses of cancer. This is particularly noteworthy, since more than 50 percent of these workers were exposed to PCBs on the job for more than 20 years, and some for as long as 40 years. NIOSH reported that the incidence of all cancer mortality for these plant populations was slightly lower than that of the general U.S. population. While 182 cancer deaths would be expected in a population of a demographic profile similar to that of the 2,500 workers, only 163 deaths due to cancer were actually observed. Also, there was no clear relationship between increasing lengths of employment in PCB-exposed jobs and the risk of mortality due to cancer.

These results cannot completely rule out the possibility that occupationally exposed persons will eventually develop PCB-related disease and mortality. But the results of these studies are reassuring when considering the possible effects of much lower levels of environmental PCB exposure on the general population. It should also be noted that the age-adjusted death rate for liver cancer in the U.S. has been declining steadily for the past several decades. This sug-

One such landfill is located in Moreau, New York. As reported in the July 14, 1983 *Saratogian*, General Electric is paying out \$2 million for corrective work at the site. Engineers plan to insert a 100-foot-deep impermeable barrier into the ground surrounding the dump and then cover it with a 3 1/2-foot-thick clay cap.

Cleanup plans for the Hudson River, so heavily contaminated because of industrial discharges, are also underway. From 1947 to 1977, over 500,000 pounds of PCBs were discharged, under permit, into the Hudson River from two General Electric capacitor manufacturing plants at Fort Edward and Hudson Falls, New York.

Three million dollars have been spent by the New York State Department of Environmental Conservation to investigate the extent of PCB contamination in the river. This study identified 40 hot spots in the upper Hudson River; a "hot spot" is defined as sediment containing 50 ppm or more of PCBs. The PCB concentrations range from five to 1,000 ppm in fine grained sediments.

A proposed government strategy for dealing with the upper Hudson River PCB problem called for dredging contaminated sediment from the river bottom. A leakproof landfill would be developed in rural Washington County, where the material would be buried. Residents of the area, which has numerous dairy farms, are opposed to playing host to the PCB-laden sediment. They have expressed concern that even if their health is not compromised, the reputation of the dairy industry might be damaged.

A look at the cleanup proposal makes one wonder about the efficacy of such a plan.<sup>38</sup> The Environmental Impact Statement indicates that this project, requiring about \$40 million, would clean up the river by about 2001. On the other hand, if left alone, the river will clean itself up by the year 2013, just 12 years later.

In Massachusetts, studies are underway concerning the need and methods for removing PCBs from the New Bedford harbor which were discharged from nearby capacitor manufacturing plants. Another example of a "hot spot" is Lake Michigan's Waukegan Harbor, where PCBs were discharged from an aluminum diecasting plant.

Research is underway on novel techniques for cleaning up PCBs. A New Jersey Institute of Technology team has discovered that an aquatic plant can use PCBs as a nutrient.<sup>39</sup> A researcher at the University of Wisconsin at Madison has cultured bacteria which can break down PCBs.<sup>40</sup>

public due to the requirement of replacing all PCB-containing power capacitors in its system before expected times. Public pressure in San Francisco has caused the Pacific Gas & Electric Company to agree to capacitor replacement, at a cost of about \$12 million.

It is obvious that inspection and premature replacement costs for electric utilities will show up in the consumer utility bill. Costs of replacing equipment in food and feed applications will show up in the consumer food bill. The cost to private industry of inspecting its equipment and replacing capacitors and transformers will show up somewhere in a consumer price index, the exact place being difficult to predict.

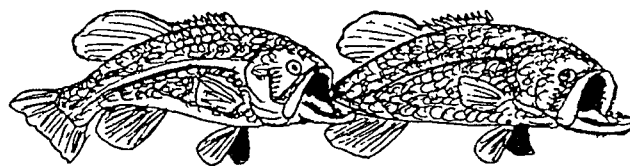
## The Alternatives to PCBs

The alternative materials to PCBs are not without problems. The most important use for PCBs was in electrical equipment, where their flame-resistant characteristics were badly needed. Alternatives to PCBs include silicone fluids, fluorocarbons, high molecular weight hydrocarbons, chlorinated hydrocarbons, high boiling oils and esters, and various blends of these materials.

All the substitutes work electrically. However, a transformer constructed for use with PCB fluid often cannot operate at the same power load with a substitute chemical, i.e., it must be "derated."<sup>37</sup> Such a transformer becomes less efficient resulting in a higher operating cost. And that is to say nothing of the safety problem. Many of the alternatives present fire risks, defeating one of the reasons why a fire-resistant alternative was originally sought to PCBs. As for the risks of toxic PCB combustion products compared to fire hazards from less fire-resistant alternatives, one EPA official stated that "if you use non-PCBs, there's a real threat that the building will burn down. So what would you rather have — a contaminated building or no building at all?"<sup>38</sup> The net effect, then, is the replacement of a hypothetical health risk from PCBs with a product certain to lead to an increased fire hazard.

## What Are We Doing to Clean Up PCBs?

Many efforts are being made to clean up PCBs in the environment. This, along with the ban and removal of PCBs, ensures that U.S. exposure will rapidly decline. PCB wastes were often discarded in open landfills. Cleaning up the landfills which once served as depositories for PCB waste is an ongoing process which will be expensive in the coming years.



PCBs discharged into rivers stay there for long periods of time and fish living in these waters acquire the PCBs either through the gills or during feeding, accumulating them in fatty tissues. In fish-eating fish, levels of accumulation are higher still.

gests that environmental PCBs have not introduced new liver cancer deaths.

## PCBs in Fish

Due to their chemical stability, PCBs discharged into rivers stay there for long periods of time. Fish living in these waters acquire the PCB either through the gills or during feeding. Because fish are unable to metabolize or excrete the PCBs, the chemical accumulates in fatty tissues. In fish-eating fish, levels of accumulation are higher still. Humans consuming fish ingest and accumulate the PCBs as well. For these reasons, fish are monitored for PCB concentration in contaminated bodies of water.

Two studies show that fish eaters have suffered no known ill effects from PCBs. The Michigan Department of Public Health, under the sponsorship of the U.S. Food and Drug Administration, measured potential health effects of higher-than-normal exposure to PCBs because of fish eating. The study involved 182 adults, 105 of whom consumed over 26 pounds of Great Lakes fish per year. A significant correlation between blood PCB levels and the quantity of fish consumed was observed. But an evaluation of health histories and current medical problems of the study subjects did not reveal any significant differences between the heavy fish-consuming group and those with lower exposure to PCB-contaminated fish.<sup>27,28</sup>

Similarly, the Connecticut Department of Health Services conducted an analysis of blood samples and medical histories on persons eating fish from the Housatonic River. Again, there was a significant

correlation between the amount of fish eaten and the levels of PCBs in blood, but no clinically important findings were noted.<sup>29</sup>

## PCB Tolerances in Other Foods

In addition to regulating the amount of PCBs in fish, the government also regulates PCB levels in other foods. The *Federal Register* of June 29, 1978<sup>30</sup> specifies the following limits which are currently in effect:

1. 1.5 ppm in milk fat
2. 1.5 ppm in the fat portion of manufactured dairy products
3. 3 ppm in poultry
4. 0.3 ppm in eggs

Most scientists agree that the primary human exposure to PCBs today comes from fish. Measured levels in most of the products mentioned above are far below the allowable tolerances.

The amount of PCBs in our diet is dropping according to an EPA report indicating that the number of Americans with high levels of PCBs declined from 9.7 percent in 1977 to 1 percent in 1981.<sup>31</sup>

## PCBs in Equipment

In addition to the dietary tolerances are a host of regulations about equipment that uses (or once used) PCBs. The Toxic Substances Control Act of 1976 banned the manufacture, processing, distribution and use of PCBs in all products that were not totally enclosed. In May of 1979, the EPA established exceptions to the general ban. Among the exceptions were oils and other items containing less than 50 ppm PCBs. As more knowledge about PCBs accumulated, the rules and regulations continued to be refined.

EPA regulations now in effect require that capacitors in areas where public exposure might occur (such as utility poles in backyards) must be out of service by 1988.<sup>32,35</sup> Use of capacitors in protected environments—such as fenced utility company grounds—is permitted until the end of their useful life. In addition, a regular inspection and maintenance program for certain PCB-containing equipment is required.

To deal with the possible toxic hazards from fires in electrical equipment, EPA added additional restrictions<sup>34</sup> on the use of PCB transformers (500 ppm or greater PCB in dielectric fluid). These include additional electrical protection on PCB transformers near commercial buildings, registration of such transformers with fire response personnel and building owners, prohibition on installation of new PCB transformers



The most extensive occupational studies of long-term exposure to PCBs involve electrical equipment workers. Aside from occasional skin irritations that disappeared quickly, no adverse health effects have been reported among workers in the electrical industry.

near commercial buildings after October 1, 1985, and removal of higher (480 volts and up) secondary voltage network PCB transformers by October 1, 1990.

## What Is All of This Costing Us?

Replacing, monitoring, and disposing of PCBs has cost a substantial sum of money. According to EPA estimates in the August 25, 1982 *Federal Register*,<sup>32</sup> some of the costs of the regulatory activities include:

- \$76.7 million for inspection of transformers (other than those in food and feed facilities);
- \$134.8 million for removing selected capacitors by 1988;
- \$16.04 million for replacing PCB electrical equipment in food and feed facilities by 1985.

Five year net costs for the recent EPA regulations on PCB electrical transformers according to the July 17, 1985 *Federal Register*<sup>35</sup> are as follows:

- \$343 million for enhanced electrical protection;
- \$7.3 million for labeling and registration of PCB transformers;
- \$390 million aggregate cost for removal of higher voltage transformers and electrical protection of other remaining transformers.

There are other costs as well. For instance, the Cleveland Electric Illuminating Company expects an incremental cost of \$8 million to be passed on to the



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January 16, 1987

Mr. John Hamelink  
Executive Director  
Boxboard Research & Development Assn.  
350 S. Kalamazoo Mall - Suite 207  
Kalamazoo, Michigan 49007

Dear Mr. Hamelink:

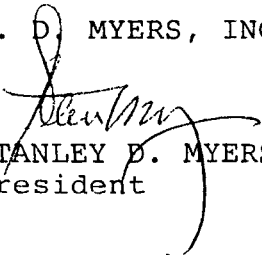
This letter is your authority to reprint our PCB White Paper for distribution among your trade group. This permission is given with the understanding that our Company and the authorship of that information will be part of the distribution and that this material will not be used for resale.

In addition, I am sending you a report by the American Council on Science and Health entitled, "PCBs: Is the Cure Worth the Cost?" This is a for-sale item and ordering information is on the back side of the front cover.

We would be pleased to work with you in any PCB work that you have at your plant and would be grateful for any references made of our Company to your trade association.

Very truly yours,

S. D. MYERS, INC.

  
STANLEY D. MYERS  
President

SDM:cmh  
Enclosure

# PCB

## White Paper

In which an exhaustive search has been made, and documented, of medical and scientific papers, etc., to refute the claims of the ENVIRONMENTALISTS against PCB. This paper speaks to three problem areas:

1. Animal Studies
2. Epidemiologic Studies
3. Bioaccumulation

and is the basis for our claim that PCBs are **not** "deadly" or "toxic" or "cancer causing".

*Written by*  
*Dana S. Myers*  
*Stanley D. Myers*  
*J.J. Kelly*

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# PCB WHITE PAPER

## PURPOSE

The purpose of this paper, and of this whole effort being conducted by S. D. Myers, Inc., through Transformer Maintenance Institute Division, is to provide all the information needed to make an **informed** and **reasonable judgment** on the issue of the use of Polychlorinated Biphenyls (PCBs). This information is desperately needed for two reasons. First, the fact the environmentalists have forced the U. S. Environmental Protection Agency (EPA) to reconsider and tighten its rules for the handling of PCBs and "PCB contaminated" objects (already too stringent) based on incorrect allegations. Second, *the fear being generated by the news media* which has literally created an atmosphere that pushes the governmental regulatory process into an untenable position in the area of environmental problems. The radical environmentalists have won a court case in which it was determined that Congress had mandated EPA to ban to a level of 0 ppm PCBs, even in such nominally closed systems as transformers and capacitors. These radical environmentalists want to hold the EPA to the mandate from Congress. Herein lies the problem. **The ban from Congress in the Toxic Substances Control Act (TOSCA) is based on the allegation that PCBs are toxic and detrimental to humans and the environment.**

This action, with respect to oil filled transformers and capacitors alone, would cost the U. S. taxpayers a conservative \$3 to \$4 trillion (\$4,000,000,000,000.00) to remove an *alleged* toxic compound from the environment. With a price tag this high which would cause more financial havoc than OPEC ever did, an in-depth study of this PCB issue is required. In light of new revelation concerning PCBs and their "non-effect" on the human health problem, it is questionable if such control is warranted at all, let alone at a cost of \$4,000,000,000,000.00.

What we have done in this report is to take the arguments, and the facts behind those arguments, of our opponents (those who think PCBs are dangerous) from their own literature and we have presented both their arguments and conclusions to show that their conclusions are not justified by the facts available to them. By this method of reasoning we hope to show that the conclusion of the environmentalists that PCBs must be banned, or even more tightly regulated in transformers and capacitors than they are now is based on *facts that do not support their conclusions*.

## BACKGROUND INFORMATION

Production of Polychlorinated Biphenyls began in the U. S. A. in 1929 by Swann Chemical Company. In 1935, Monsanto bought out Swann Chemical and became the sole producer of PCBs for transformers and other uses. The reasons for this monopoly lay in the fact that the standards for purity as set down by General Electric Company — the first ones to apply PCBs to electrical equipment — were so high that no one else wanted to enter into the business. As a result of these standards, the PCBs produced in America under Monsanto Company's tradename of Aroclor®, were the purest of any PCBs produced in the world.

PCBs were manufactured primarily because of their excellent dielectric and heat transfer qualities, not to mention their non-flammability. Not only did their non-flammability capabilities make them suited for use in capacitors, but also made them ideal for use in areas where public safety was concerned, such as, in transformers inside public buildings.

This set of uses, coupled with the unusual stability of the compound, have led to the calling of PCBs as the "wonder chemical of the century". They greatly aided American's industrial expansion since the early 1930's. It has been said that Russia's industrial successes could not have occurred had it not been for PCBs. What then, went wrong?

In 1966, a Swedish scientist was trying to determine the level of DDT in fish. He found some unidentified chemical in his studies. This unknown chemical turned out to be PCBs. That PCBs had been found in the environment should have come as no surprise since they are so stable and they were used in such a multitude of products (e.g. paints, adhesives, caulking compounds, plasticizers, inks, lubricants, carbonless copy paper, sealants, coatings, dust control agents, heat transfer systems, hydraulic systems, etc.)<sup>1</sup>

## THE PRIMARY EVIDENCE

The big blow to PCBs, however, came two years later in Japan. It was reported that PCBs, as a contaminant, got into some rice oil, which was then sold to the surrounding population. This rice oil was used for cooking purposes for a period of approximately 100 days. Up to 1300 people were adversely affected from the ingestion of this cooking oil containing PCB. Those affected ate 720 ml. to 4.4 liters of oil.

containing 0.5g of the contaminate, with the average consumption being approximately 2g.<sup>2</sup> **These effects were erroneously reported as being caused by the PCB.**

The symptoms of this "oil disease" ("Yusho") have been described as follows: dermal disorders, including swelling of the eyelids, acneform eruptions and pigmentation of the nails, gums and lips and an increased discharge from the eyes was observed. The people also complained of things like headaches, indefinite stomach ache, numbness or pain in the extremities, coughing, and bronchitis-like symptoms. Gains in the height and weight of boys "decreased significantly" after ingesting this contaminated oil.<sup>3</sup> Babies born to women with Yusho had abnormal skin pigmentation and some anatomical abnormalities. However, "these were not permanent, and postnatal body and mental development appeared normal in these and other Yusho children."<sup>4</sup> **(NOTE: All of these symptoms were alleged to be caused by PCBs. The allegations have proven to be false. But, on the basis of "Yusho", the Congress of the U.S.A. passed legislation to Regulate and Ban PCBs - TOSCA).**

These, then were the illnesses associated with Yusho - illnesses that would make the world want to rid itself of the "rice oil contaminant" that caused all these problems. (This is especially true, since the results of the contaminants on humans, were graphically portrayed in a picture book). That contaminant that was first thought to cause the Yusho disease was first diagnosed to be Kanechlor 400, a Japanese PCB in the amount of up to 3000 ppm. Thus began the movement that eventually saw PCBs banned in Japan, Sweden, Canada and the United States.

## THE DEFENSE

As is often the case with initial findings and the accompanying announcements, not all the facts in this case were in at first. Kanechlor 400 was present but it was not the most toxic (if it even is toxic at all) chemical involved. Polychlorinated Dibenzofurans (PCDFs) a partial oxidation by-product of PCBs, were found to be in concentrations of up to 500 times that normally found in Japanese PCB.<sup>5</sup> Not only this, but the tetrachloro- and pentachloro- fractions, which have through animal toxicity studies, been determined to contain the more toxic isomers, were found in high concentrations.<sup>6</sup> PCDFs affect the thymus, skin (acne), liver and hematopoietic system to a much greater degree than PCBs, and are 1000 times more potent as enzyme inducers.<sup>7</sup>

In addition to this, PCDFs were chronically retained in the livers of Yusho victims. Three Yusho patients eventually died (two in 1969, one in 1972); these deaths **were not** attributed to the ingestion of the contaminated PCBs. In the tissues obtained at autopsy, **PCDFs** were found in high concentrations.

**No PCDFs** were found in the tissues of two controls. "although PCB concentrations of about 1-1.5 ppm were found in the adipose tissue and liver fat (of the controls)."<sup>8</sup> The PCB/PCDF ratio in the rice oil was about 200, while the ratio of PCB/PCDF found in the adipose tissues at autopsy were 2, 5 and 12, a considerable difference.<sup>9</sup>

By the end of 1977, 31 classified deaths of Yusho patients had been recorded. Eleven deaths were from neoplasm, which is 4.5 deaths more than would normally be expected.<sup>10</sup> However, this 4.5 could easily be zero or not attributed to Yusho, since the data were not age-adjusted.<sup>11</sup> In fact, a booklet prepared by the Hazard Evaluation System of the State of California, one of the strictest states with respect to environmental issues, cites a 1979 study (Urabe, et al.) "the evidence is not conclusive that PCBs caused these deaths".<sup>12</sup>

## OUR PCB LAW IS BASED ON "YUSHO"

Now is the time to see what is presently being said about the relevance of Yusho to the study of the toxicity of PCBs and their possible human effects.

We will begin this exercise with a quote from John F. Brown, Jr., PhD, Manager of the Life Science Branch of G.E.'s Corporate Research and Development as he explains the irrelevance of linking PCBs and Yusho together. "...it was the PCDF's that were chronically retained in the livers of the chronically-ill victims. In these victims, the average dose of the PCB/PCQ (Polychlorinated Quatraphenyls)/PCDF mixture ingested was 2.0g., *which is less than the PCB body burden being carried by many seemingly normal (U.S.) capacitor workers today.* Thus, it would appear that the toxic agent responsible for Yusho disease was PCDF, not PCB."<sup>13</sup>

Dr. Renate Kimbrough, M.D. a Toxicologist at the Center for Disease Control in Atlanta, Georgia, who has been one of the government's star witnesses against PCBs was involved in the following dialogue in a North Carolina court case in 1979:<sup>14</sup>

**Question:** But, Dr. Kimbrough, did you participate in the preparations of a report by a subcommittee of the Department of Health, Education and Welfare, July, 1976?

**Dr. Kimbrough:** Yes

**Question:** And let me ask you if I'll read from that study and ask you if this is a fair statement. "The complexities and uncertainties associated with the most recent reports of the Yusho Incident in Japan make it extremely difficult to quantify possible human health effects resulting from exposure to PCBs alone." In other words, Doctor, isn't it true that there is a strong suspicion now that the other chemicals that got into that rice oil other than PCBs are the things that caused the problems?

**Dr. Kimbrough:** They certainly caused part of the problem. We don't know whether they caused all

of the problem but they are very toxic

**Question.** And by the same token we don't know whether PCBs caused any of the problems because of the presence of those other chemicals I'm talking about scientific

**Dr. Kimbrough:** In the Yusho incident, no <sup>15</sup>

A 1980 report issued by the State of California Research Division contains many such statements. One of them says that "it is therefore considered highly probable that some of the cause of Yusho toxicity is due to the actions of PCDF" <sup>16</sup> (This same report finally concludes this "a review of the available literature on PCB, PCDDs (Polychlorinated Dibenzo Dioxins), and PCDFs indicates that exposure to these substances, even in microgram quantities, can lead to extremely serious human health effects" <sup>17</sup> What is the source of his convoluted reasoning? Their bibliography of 51 sources is constituted of five articles on PCB and five sources deal specifically with the Yusho incident and 46 articles deal with PCDDs and PCDFs. *They admit that PCBs have no proven record of human health problems, but because they "look alike", PCDFs and PCDDs, they group all three together and call them bad!!!* (NOTE: It is this type of reasoning that has led to the unreasoning and unreasonable pressure of the radical environmentalist that will eventually cost our country \$4,000,000,000,000.00 — or \$16,000.00 for every man, woman and child in the country today!!!)

A 1981 report prepared by the Hazard Evaluation System of the State of California states that "It is not clear how much the health effects observed in Yusho victims can be extrapolated to occupational exposures for the following reasons

- 1 The average amount of PCB (Kanechlor 400) ingested was estimated to be 2 grams and the minimum 0.5 grams (Kuratsune et al., 1971). This is a higher dose than has been reported in most occupational exposures. In addition, the PCBs were ingested as opposed to inhaled or skin-absorbed as is the case with occupational exposures.
- 2 The contaminated oil contained "used" (oxidized) Kanechlor 400 the exact chemical composition of which is unknown.
- 3 Frying of foods with the rice oil could have produced further new compounds which may have altered the toxicity of the PCBs or the toxicity of possible contaminants.
- 4 Yusho oil was shown to contain high concentrations (2500 ppm) of dibenzofurans.
- 5 Reported concentration of PCBs in the oil may not have been accurate enough to permit a rigorous quantitative analysis since the methods for estimating PCBs in foods were not fully developed at the time <sup>18</sup>

The National Institute for Occupational Safety & Health (NIOSH) published a criteria document on PCBs in 1977. They say that

\*Publication, Dept. of Health, Education and Welfare, 1976.

The relevance of the Yusho episode to occupational PCB exposure is compromised because (1) the oil was ingested, and (2) it contained large concentrations of dibenzofurans compared with those in the PCBs to which workers generally have been exposed in their occupations. Its relevance is further compromised because the effects observed from daily ingestion of 1-15 mg of PCBs (165, 167) were peculiar and excessive compared to those observed in workers exposed by inhalation of PCBs 1-5 mg/M<sup>3</sup> (120, 125), notwithstanding that the amounts absorbed may have been similar.

Nevertheless, information obtained from the Yusho episode is relevant to the study of PCB toxicology and occupational exposure. The information established that PCBs can be transmitted from mother to fetus, and, in the milk, from mother to child. It also establishes that some PCB compounds are eliminated from the body relatively rapidly, and that others may require years for elimination <sup>19</sup>

*After NOISH came to this conclusion that Yusho could not be used to determine PCB toxicity, they turned around, and in the same document, state that the "toxic effects from ingestion of PCBs have been well documented in humans" <sup>20</sup>*

The authority for this statement? Forty footnotes — every single footnote referring to the early Japanese studies of the Yusho incident, when all of the effects were erroneously attributed to PCBs.

## EPA — THE AGENCY TASKED BY CONGRESS TO CONTROL PCBs

Finally, what has EPA said about Yusho? Please note the dates as you read the conclusions reached.

**EPA 1975\*** — Subsequent investigations (have shown that the "Yusho Oil") had been more than half pyrolyzed to PCQs and that this PCB-PCQ mixture contained 0.25% (2500 ppm) of PCDFs. It was the PCDFs that were chronically retained in the livers of chronically-ill victims.

The same oils were reanalyzed in 1976.

**EPA 1977** — Because of the relatively large exposure of the Yusho victims to PCDFs it is inappropriate to use this data to make quantitative estimates to the TOXIC hazard posed by PCBs to humans 2/2/77, Federal Register, p. 637.

Compare these first two statements with EPA's 1979 statement.

**EPA 1979** — Knowledge of PCB toxicity is based primarily on the Yusho Japan incident in 1969 (NOTE: Why has the EPA contradicted itself here and taken a position contrary to all recognized scientific evaluations of Yusho?) "Food and Feed Alert Pamphlet, USEPA, Dec., 1979.

Does not this last statement (when compared with EPA's earlier statements and the statement by all the "authorities" that a determination of PCB toxicity from Yusho is scientifically inappropriate) tell us that the case against PCBs, is **"based primarily on no evidence at all?"** This is what EPA has said, whether wittingly or not. The evidence is here. **Our rules regulating PCBs are based on this fallacy!** This is what the Congress must know,, this is what the public should know: **that PCBs are not a health problem to human kind!**

In 1976-77, Congress passed the Toxic Substances Control Act (TOSCA). The only specific chemical listed in this law was PCBs — based upon one senator's amendment to the original TSCA law because of what happened in Japan in 1968 and to political pressure brought about by publicity of the event. This law prohibited the sale, distribution or manufacture of PCBs after 1979. Monsanto, the only U.S. manufacturer, ended its production of the chemical in 1977. After that time, PCBs were to be controlled. The EPA ended up with this regulation job, and set down rules which, in part, said that transformers with less than 50 ppm PCB could be considered a non-PCB object. The radical environmentalists, working through the Environmental Defense Fund (EDF) sued EPA for allowing any ppm of PCB. (EDF vs EPA DC Cir No 79-1580 Act 501980, October 30, 1980). The court ruled in favor of the EDF and said that Congress mandated a ban (0 ppm) on PCBs in transformers and capacitors. EPA has said that transformers and capacitors were "closed systems" but the court ruled in favor of EDF, recognizing that transformers and capacitors do sometimes leak or fail. EEI (Edison Electric Institute) as a friend of the court, told the court that the ruling left the electrical industry of America two choices, they could either operate illegally (which they would not do) or they would have to shut down all operations immediately. The court decided that this might not be such a good idea so it gave EPA 18 months, till October, 1982 to address these two questions

- 1 PPM level of PCB to be regulated, and
- 2 Rules of operation of "totally enclosed" devices containing any PCBs

Since Congress passed TOSCA, identifying PCBs as a priority pollutant to be regulated, the EPA must act on the mandate of Congress. *Therefore, the solution to this problem must go back to the source of the problem: Congress.* Congress must be made aware of the growing body of literature that completely exonerates electrical grade PCB from the health and environmental problems it has allegedly caused \*

## WHY ANIMAL STUDIES ARE USED

The consensus of those who study PCBs are in agreement that the Yusho event cannot, scientifically-  
\*See Addendum No. 2, Page 111.

ly, be the basis for condemnation of PCBs. What, then, is the basis for the ban on PCBs? A review of the literature alludes to a *lack of epidemiologic evidence* to support their position (NOTE. **They are willingly ignorant** of over 15 epidemiologic studies<sup>11</sup> *And the reason why they are willingly ignorant of these 15 studies? Because they can not find any evidence — anywhere to support the conclusion they have pre-determined to make! That's right. If they can't find evidence to support their conclusions — let's "create our own evidence."* Hence — *animal studies!*) Therefore, the people fighting PCB turn to **animal studies** to build their case<sup>21</sup> Due to the superabundance of animal studies, it would be repetitious and hence boring to cite all those studies here. We will concern ourselves, therefore, with looking at the results of the more representative and widely cited studies

## CONSIDER DOSAGES USED ON ANIMALS

In order to understand the results of these animal tests, a comparative knowledge of dosages is needed. The NIOSH criteria document cites a 1975 paper presented before the EPA in a national hearing on PCBs as estimating that the "general U.S. population" has a dietary intake of PCBs of between 10-20  $\mu$ g/day.<sup>22</sup> Inhalation of the air, NIOSH says, may add up to another 7  $\mu$ g/day (100  $\mu$ g/h<sup>3</sup> x 50 liters/min.) Taking maximum figures, an average person in the U.S. will take in 27  $\mu$ g/day, or for a 154 pound person, or approximately .39  $\mu$ g/kg of body weight/day. Whichever figures are used, it still works out to be about 0.1 mg/kg/day. Now compare this with the amounts fed these animals.

Dr. Renate Kimbrough, the Toxicologist widely quoted by environmentalist concerned about PCBs, has done extensive testing on rats and mice. In one experiment in 1975, Dr. Kimbrough and Dr. Linder experimented on BALB/cJ male mice. The mice were fed Aroclor 1254 over eleven months. The average PCB intake was 49.8 mg/kg/day, *the equivalent of over 2.5 pounds for an average person, or 129,111 times what one, at the maximum, would be expected to eat.* Adenofibrosis was identified in the livers of these mice. "These lesions, according to the authors, **may or may not** be precursors of malignant lesions."<sup>23</sup> (Emphasis ours)

In the following year, Dr. Kimbrough fed Aroclor 1260 (60% Chlorine, by weight, Aroclor 1242 would be 42% chlorine, by weight) to 200 rats in their diet for 21 months. The amount consumed was from 5-10 mg/kg/21 months.<sup>24</sup> This is 20-40 times what an average person (154 pounds) would consume in that same period. On 170 rats, elevated nodules were found on the livers. Twenty-six of these were hepatocarcinomic (compared to one in the control group) and the other 144 had "hepatocellular nodules that were described as characteristic of

neoplastic nodules or synonymously, hyperplastic nodules. The authors said that 'neoplastic nodules are part of the spectrum of response to hepatocarcinogens and must be included in the evaluation of tumorigenesis'."<sup>25</sup> *Hence came the cry that PCBs might cause cancer* (NOTE: that is, cancer of the liver). (see page 10). Monsanto had previously conducted tests with Aroclor 1260, as well as with Aroclors 1242 and 1254 in which liver injury was produced, but no cancers were seen. They, therefore, did a reexamination "of the original liver slides from the Monsanto studies as well as additional liver sections from all rats in the Monsanto 2-year feeding studies."<sup>26</sup> The slides were independently examined by Prof. W. Richter of the University of Chicago, by Dr. D. Gordon of Industrial Bio-Test Labs, and by Prof. Parvis Pour of the Epopley Institute for Research in Cancer. Dr. Pour also examined sections of liver from the rats in Dr. Kimbrough's study. No carcinomas were seen in Monsanto's rats, and Dr. Pour did not agree with Dr. Kimbrough's diagnosis of liver cancer in her rats.<sup>27</sup> So, at the very least, this study of Dr. Kimbrough's that has been cited as proof of the potential carcinogenicity of PCBs has to be viewed with serious reservations.

Another 1974 study done by Linder, Gaines and Kimbrough involved feeding rats Aroclor 1254 at 5 ppm or Aroclor 1260 at 100 ppm level. The study covered a "two-generation period" and no effects on reproduction were observed.<sup>28</sup>

Another of the "big guns" of the environmental groups opposing PCB use is Dr. J. R. Allen. Although he has also done studies on rats, he and his co-workers are cited most often with respect to their experiments on rhesus monkeys. In their 1973 experiments, Aroclor 1248 or Aroclor 5460 was fed to the monkeys for 12 weeks. Each set of monkeys had access to 400g daily food supply laced with 300 ppm and 5000 ppm of PCB, respectively. This means that in a 23 week period, these monkeys received 10g and 168g, respectively. **It would take a U.S. resident 1,014 and 17,047 years, respectively to consume this much PCB.** The results for both groups will be put together for this one part. The monkeys lost, on an average, between 19 and 26% of their body weight, they lost hair, had puffy faces, edematous lips, and swollen eyelids with purulent exudates around the eyes. At necropsy, extensive alopecia, acneform lesions of the skin, subcutaneous edema and liver hypertrophy with fatty infiltration were evident.<sup>29</sup>

Another study by Allen on 12 female rhesus monkeys fed 26 ppm Aroclor 1248 in an unspecified diet turned up some reproductive problems. The average weight of the monkeys was \*. If these monkeys ate 300g of food a day, two-thirds of the amount used in the experiment on 1973 monkeys, then after the two month feeding time, they consumed about 457.5 mg, or 1.34 mg/kg/day. This is

equivalent to **3472 times what a 154 pound person would normally eat.**<sup>30</sup>

Allen's 1976 study, done in conjunction with Deborah Barsotti, has been cited as an example of what will happen with low doses over a long time period. At first glance, it would seem to fit that category, for they fed the rhesus monkeys 2.5 and 5.0 ppm Aroclor 1248. But then it turns out that the total amount of PCBs fed the female monkeys was 180 mg and 364 mg respectively. This was over a six month period. Taking 6 kg as the average weight (in the 1974 experiment, the average weight was 5.6 kg - 6 kg will make the numbers more conservative). This works out to 30mg/kg/6 mos, some 426 to 862 times the amount an average U.S. resident would consume. In fact, it would take a 154 pound woman 213 years to consume that much (adjusted for weight) given a normal diet—well past a woman's normal childbearing days. And that was what this study tested for: Reproductive problems. Conceptions did occur, some abortions, a still birth and other various problems also occurred. The babies that did survive showed signs of PCB toxicity after 2 months. (Acne, swollen eyelids, increased skin pigmentation).<sup>31</sup>

The following animal studies have been included in this paper not because their results or test methods show much deviation from the previously cited studies, but because NIOSH includes them in their criteria document and we wish to give our opponents' arguments enough exposure so that they cannot criticize our position by saying we blew down a straw man.

Allen, 1975 rats. Gave rats a **single dose** of a PCB similar to Aroclor 1242 (2, 2', 5, 5' - tetrachlorobiphenyl). Zero out of ten survived a 1.0g/kg dose and ten out of ten a 0.5 g/kg dose. At dietary levels, these doses correspond to a **50 year and 100 year** intake for humans. "With the exception of hemorrhage and atrophy of the thymus, which were related to the decrease in the cortical thymocytes, and enlargement of the liver and kidneys, all tissue samples were normal when compared with those from the nonexposed group."<sup>32</sup>

Allen, 1975, rhesus monkeys. Gave them a single 18 mg/kg dose of the above mixture. It would take an average U.S. resident **128 years** to consume this much PCB. "No overt clinical effects were seen in the treated monkeys...Only the adipose tissue and adrenals had high PCB assays, and microscopically, except for a moderate proliferation of hepatocytic SER, all tissues were normal."<sup>33</sup>

Allen, 1975, rats. Fed rats 100 ppm of Aroclor, 1248 or 100 ppm 2, 2', 5, 5' - tetrachlorobiphenyl. "The only significant difference at autopsy was an increase in liver weight as a percentage of body weight..."<sup>34</sup>

Bruckner, 1973, rats. Gave them a single dose by oral intubation of either 2.5g/kg or 6.0g/kg Aroclor 1242. A 2.5 g/kg dose for a 70 kg man (154 pounds) is 4.6 ounces, or 175g. Both groups got sick and the

\*5.6 kg

6g/kg group eventually died. "The conditions of the rats receiving the lower dosage gradually improved after the first 24 hours and was normal at the end of 72 hours."<sup>35</sup>

Berczy, Cobb and Cherry, 1974 rats. This was an inhalation study in which the rats inhaled air that contained 2.54 mg/liter PCB (2500 times the allowable amount for humans), for six hours. "During exposure there were repeated episodes of blinking and sneezing. Signs of irritation disappeared after cessation of the exposure. During the subsequent 14-day observation period, food and water consumption and growth of the rats were considered by the authors to have been similar to those of the controls. No gross pathological changes were seen when the rats were killed 14 days after removal from exposure."<sup>36</sup>

Curley, 1973 rats. Female rats were given 0, 10 and 50 mg/kg Aroclor 1254 on days 7-15 of pregnancy. This corresponds to 0, 6.3 and 31.5g for a 70 kg woman. There were 0, 1, and 4 stillbirths on the average for each respective group. Each group had 10 mothers giving birth. "Although the PCB doses for group 3 was five times that of group 2, the average amount of PCB differed components measured in the fetuses from these two groups differed only twofold."<sup>37</sup>

Hansell and Ecobichon, 1974 rat livers. After intraperitoneally injecting rats with various PCB mixtures for either 3 consecutive days at 50 mg/kg or 7 consecutive days at 100 mg/kg, the rats were killed. There are alterations in the hepatocytic ultrastructure and a "marked proliferation of SER; increased microbodies, and liquid droplets. Two conclusions were made. One was that SER proliferation appeared to be related to the degree of chlorination (especially to the presence of a chlorine in the 4 and 1 or 4' positions). The other was that an increase in hepatic weight and cell size cited in other studies was absent. Hansell and Ecobichon "observed that this apparent anomaly may have been due to the duration of PCB administration, only 3-7 days, and to the relatively low dosages."<sup>38</sup> (Our notation — these "relatively low dosages," if put on a human scale, work out to between 15 and 71 **lifetimes** of human intake — general U.S. population, 70 years to a lifetime — ingested in a week or less of time. We would hate to see what would happen to a rat if given a relatively high dosage.)

These next three studies can be found in a booklet published by the State of California. No mg/kg amounts were given in the reports, and no standard for determining that from PPM seems to work adequately in those cases where both are known, so only PPM figures will be given. Anyway it is the results of these tests that are important.

The National Cancer Institute, 1978, Fisher 344 rats. Groups of 24 eight-week-old rats of either sex were fed Aroclor 1254 at dietary levels of 0, 25, 50 or 100 PPM for 105 weeks. Their report stated that

Aroclor 1254 was **not carcinogenic** under test conditions.<sup>39</sup>

Norback and Weltman, 1980, rats. They fed Aroclor 1260 to Sprague-Dawley rats at dietary levels of 0 and 100 PPM for 105 weeks. The study concluded that this mixture was "carcinogenic in female rats, causing significant increases in liver hepatocellular carcinomas."<sup>40</sup> (Note that it was the liver that had the carcinomas—see page 10).

Norback and Weltman, 1980, rats. The same experiment as above except they used a purified PCB mixture. This PCB mixture was also deemed to be carcinogenic, in female rats, "Producing an increased incidence of liver hepatocellular carcinomas among the dosed animals."<sup>41</sup> (Again, note that it was the liver that had the carcinomas — our notation, see page 10).

## FROM NIOSH STUDIES

Torok, 1976, Pregnancy in NMRI mice. Group one was a control group, group two received 375 mg/kg/day for three days and group three received 750 mg/kg/day for three days. In other words, these mice received in three days, from 7,990 to 15,900 times what a 154 pound woman would ingest in one year. The result was "longer intervals from breeding to parturition (birth)...(and) reductions in the number of dams with litters and in the mean litter size."<sup>42</sup>

Treon, 1956, 10 mice, 6 guinea pigs, 4 rabbits and a cat. This was an inhalation test. Each set of animals was exposed for 7 hours/day, 5 days a week at differing concentrations and different mixtures. The group inhaling Aroclor 1242 did this either at 8.6 mg/liter or 3 weeks, or 1.9 g/liter for 31 weeks or 6.83 mg/liter for 17 weeks. The groups inhaling Aroclor 1254 did this at either 1.5  $\mu$ g/liter for 31 weeks or 5.4  $\mu$ g/liter for 17 weeks. The standard for workers is 1 mg/m<sup>3</sup> which is the mathematical equivalent of 1  $\mu$ g/liter.

No consistent changes in mortality, growth, pathology, organ size, liver function, or hemologic parameters were found in animals exposed to Aroclor 1242. The animals exposed to Aroclor 1254 vapors showed no changes in growth or mortality but microscopic evidence of apparently reversible hepatic cellular injury was found in all species but the cat. At both exposure levels, enlarged livers were found in the animals exposed at 5.40  $\mu$ g/liter.<sup>43</sup>

Villeneuve, 1971, reproduction in rabbits. They were fed Aroclor 1254 for 28 days. One group was fed a total dosage of 350 mg/kg, another 700 mg/kg, and the other 1400 mg/kg. Put in human terms, these dosages are the equivalent of 35, 71 and 142 lifetimes of intake for an average U. S. resident, 154 pounds. Weight gains in the pregnant mothers were down, and liver weights compared to body weights were up. Pregnancies did occur, but so did many abortions, and resorptions. At least one rabbit had two normal fetuses.<sup>44</sup>

Villeneuve, 1971, fetotoxic effects in rabbits. These rabbits were fed Aroclors 1221 and 1254 at 1 mg/kg/day and 10 mg/kg/day for around 28 days. A 1 mg/kg dosage is equivalent to one year's intake for a 154 pound person. Twenty-eight days of this is the equivalent of 28 human years intake. "Neither Aroclor had a fetotoxic effect at either dose level."<sup>45</sup>

These, are a representative sampling of the animal studies conducted which involve PCBs. Animal studies are one of only two arguments (excluding Yusho) that have been put forward in defense of the position that PCBs should be banned. It is therefore one of the utmost importance to determine what relevance these animal studies have to the human population. This is especially so with regards to the fear inducing potentially carcinogenic label that gets pinned on PCBs. (NOTE: *Of the scientific reports we have read none say PCBs are carcinogenic to humans, only the media has pronounced them so—see addendum*).

## ANIMAL STUDIES AND RELATION TO HUMAN BEINGS

A 1980 study by the California Research Division of PCBs had this to say:

The biggest difficulty in using animal studies to determine potential health effects is in extrapolating toxicological results from animal species to humans. It is often seen that two types (species) of animals do not react the same way to the same chemical.<sup>46</sup>

One good example of this was seen in a study with TCDF (Tetrachloro Dibenzo Furan), the contaminant in the Yusho incident. The single oral LD<sub>50</sub> (lethal dose for 50% of test subjects) in guinea pigs was estimated at between 5 and 10 µg/kg body weight while single oral doses of 6000 µg/TCDF/kg body weight did not produce any toxic effects in mice.<sup>47</sup>

The 1981 California study states that "the effect of PCB exposure on immune and endocrine system function has not been carefully studied in humans. So the relevance of these animal observations to human health remains unknown."<sup>48</sup>

The National Academy of Sciences Division of the National Research Council has also called into question the relevance of animal studies to human health. The following quotation was with respect to TOSCA's testing results.

It should be noted that most of the chronic tests proposed to assess human health hazards require use of species (rodent plus one other mammal) that would not adequately reflect the human toxic response to PCB exposure. The common laboratory test animals (rats and dogs) do not always respond to PCB exposure in the same manner as humans, and Table 3.6 suggests that no one species exhibits "typical" human symp-

tons of PCB poisoning except in the case of reproductive tests.<sup>49</sup>

NOTE: In regards to this statement, consider the fact that penicillin kills guinea pigs.<sup>50</sup> Should penicillin be banned because of this? Aspirin administered to rats causes birth defects in rats.<sup>51</sup> Should aspirin be banned because of the rats?

Dr. Leonard Goldwater, M.D., an expert in the field of toxicology gave a courtroom his opinion of animal studies. "Animal studies tell you what happens when you give chemicals to animals."<sup>52</sup>

Dr. G.B. Gori, formerly Director of the National Cancer Institute's Division of Cancer Cause and Prevention, concurs. Says he:

Science is now beginning to realize that our ability to assess human cancer hazard from animal tests may not surpass that of ancient soothsayers examining the entrails of sacrificial animals. Animal data are specific only to their experiments, and generalizations lead only to paradox. For instance, fat, meat, sugar and other common foods can influence cancer in animals and would have to be classified as carcinogens by the same animal test criteria that so label aflatoxin, a contaminant that also induces cancer in animals.<sup>53</sup>

These opinions may be disputed, so we would like for you to think about this issue of the relevance of the type of animal testing done with PCBs to its effects on man's well-being. The basic assumption upon which their extrapolations from the animal realm to the human one is that a linear relationship exists between high doses to animals and low doses to human beings.<sup>54</sup> For the sake of simplicity let's forget about the animal part and deal with the correlation between high and low doses. Most of the animal tests were done by giving the animal a high dose of the PCB over a short time span. In fact, "...most animal feeding experiments have been conducted with dietary levels of PCBs that are much higher than those ingested by Yusho patients..."<sup>55</sup> So let's conduct a study along the same lines as those done with PCBs, but this time with chocolate bars. (As will be shown later, the "need" for animal studies comes about due to the fact that no short-term effects from PCB use can be cited and animal studies can be used to show that there is a potential long-term risk against which we must be on guard.) Since we want to test for long-term results, we will want to give a lifetime's supply of chocolate bars to someone in a short period of time. Or better yet, let us, as was done these animal studies, give a person hundreds or even thousands of lifetimes of chocolate bars. Say, however, we give him 100 chocolate bars a day (or a thousand cans of pop if testing saccharin) every day for three months. What would happen? After day one he would probably be sick. Day two would see a sore throat developing. Day three would see an increase in acne. Day ninety

— who knows? Better yet, who really cares? The irrelevance of such a test for determining the long-term effects of a substance is striking. No one in their right mind, would even propose such a test, let alone make a decision based on it. But to then add the fear-laden term "cancerous" or "potentially carcinogenic" to the results of such tests is irresponsibility at its best.

Even the EPA somewhat recognizes that this is the case:

Because the extrapolation from animals to man is subject to some uncertainty, corroboration of laboratory test data with sound epidemiologic information is desirable.<sup>56</sup>

## STUDIES ON HUMAN BEINGS

It is with this recommendation that studies of the human population be included in any decision that we begin our next section.

Before examining specific cases of human contact with PCBs, however, it would be good to look at the risk to the population as a whole. This can be done by first determining the amount of PCBs that are in the population as a whole. The following three paragraphs describe studies done that determine the PCBs content of fat. The findings are summarized in a table following the paragraphs. It shows the percentages of people falling within each grouping.

The EPA's Human Monitoring Survey analyzed human adipose tissues, a major deposit area, from 1968 to 1972.<sup>57</sup>

Price and Welch, 1972, describe the findings of a study done by the Michigan State Department of Health Pesticides (MSDHP) on over 4000 human adipose tissues. They also mentioned finding 100-250 ppm in the adipose tissues in an autopsy of a 77 year old man. The highest PCB concentration was in the liver.<sup>58</sup>

The Human Monitoring Survey (HMS) examined 1277 (A) adipose tissues in one year and 1047 (B) in another. The years ran between July, 1972 through June, 1974.<sup>59</sup>

	EPA	MSDHP	HMS <sub>A</sub>	HMS <sub>B</sub>	50 kg	70 kg	100 kg
Percent of Test Subjects							
NONE	—	—	24.5	9.1	0	0	0
1 PPM	69	55	40.2	50.6	.05	.07	.1
1-2 PPM	31	36	29.8	35.4	.1	.14	.2
2 PPM	—	9	5.5	4.9	.5	.7	1

The right side of the above table gives the figures for how much the PPM translates into for a 50, 70 and 100 kg person. The numbers are in grams and were calculated using the high figure, i.e., 1 and 2. The important things to note from this table are: **One**, the low amount of PCBs present in the body; and **Two**,

that over 90% of the U.S. population has less than 2 ppm PCB.

The National Academy of Sciences has estimated that the mean concentration of PCBs in human adipose tissue of U.S. residents is 1.2 mg/kg. For a 154 pound man, that works out to 0.084 g. Compare this amount to what a 154 pound West German carries, which is over six times that amount: 0.55 g. To give a further comparative indication of where the U.S. stands in this matter, a table from the National Academy of Sciences has been reproduced below.<sup>60</sup>

TABLE 1.24 PCBs IN HUMAN ADIPOSE TISSUE

Country	Mean Concentration (mg/kg)
Denmark	5.0
Japan	4.7
West Germany	7.9
Austria	4.6
U.K.	1.3
Norway	0.9
Canada	1.2
East Germany	6.4
Israel	3.6
New Zealand	0.9
U.S.A.	1.2

**As can be seen, the U.S. has one of the lowest mean concentrations of PCBs in the industrialized world.**

These figures also provide a check for the NIOSH figures for daily PCB intake that have been used for comparative purposes in the section on animal studies. NIOSH said the dietary intake was on the order of 10-20/μg/day and intake from inhalation up to .1μg/m<sup>3</sup>. We used 27 μg/day as the high figure. Fifty years of intake at this level would yield a body burden of 0.49275 g. For a 154 pound person that works out to 7mg/kg, or 7 ppm — almost six times higher than the average. Which means that the estimated daily intake of 27/μg/day is either too high or else the PCBs are leaving the body. So, if we have misrepresented the comparative amounts in the animal studies, we have certainly done so on the conservative side.

Polychlorinated Biphenyls have also been found in mother's milk, a fact that some try to exploit for sensational purposes. The most comprehensive study we have thus far encountered was done by E.P. Savage, who reported his findings to NIOSH in 1977. One hundred-forty-one human milk samples from 40 states were tested for PCBs. One hundred-twelve samples contained over 50 ppb, (parts per billion) with the highest being 350 ppb. (Caution should be exercised when looking at milk figures because many times they list the findings on a *fat* basis, which is less than 3% of the milk. This way

they can put down a bigger number to evoke more fear. For example, on a fat basis, the 350 ppb in the milk translates into 12.6 ppm.)<sup>61</sup> After discussing the PCB level in human milk and adipose tissue, NIOSH concludes with the following statement, giving 12 sources from which it made this decision.

"While no adverse effects have been associated with PCBs at the concentrations found in adipose tissue, blood, or milk of individuals whose only known exposures were from environmental concentration, knowledge of these concentrations is important to the evaluation of reports on occupational exposure."<sup>62</sup> Further at a Toxic Substance Control Institute Seminar October 15-19, 1979 *Raymond D. Harbison, Director of the Toxic Substances Control Laboratory at Vanderbilt University — said PCBs are totally immobile and are not carcinogenic to humans.*<sup>63</sup>

## INCIDENCE FOR HUMAN EXPOSURE

Since PCBs in the environmental levels present have caused no adverse effects on human life, what segment of the population might have cause for concern? Those workers who are occupationally exposed. NIOSH cites a 1975 study, when PCBs were still being manufactured. In its report it states "that 12,000 workers have potential occupational exposure as a result of current uses of PCBs in their working environment."<sup>64</sup> (NOTE: Production of PCBs was terminated in 1977). To better understand the potential risks involved let us compare this figure with some other risk numbers. The American Cancer Society estimates that **78,750 persons will die of lung cancer caused by smoking in 1981.** These are real deaths and are six times more numerous than a "potential occupational exposures."<sup>65</sup> For some other examples, let's translate the 12,000 into a per 100,000 basis. It works out to 8.3. FBI statistics from 1976 state that a person has 66% more of a chance of being murdered (and by non-negligent manslaughter) than he does of being "potentially-occupationally exposed" to PCBs.<sup>66</sup> By 1976, the deaths of women from alcohol-related diseases were almost 43% higher than the number of workers "potentially" coming into occupational exposure with PCBs.<sup>67</sup> A person has over 250 times the probability of having his house burglarized as he does of coming into "occupational exposure" with PCBs.<sup>68</sup>

Whenever policy is being determined, the risk factor must be taken into account. Life is filled with risks and nothing is ever risk-free. **Even if** PCBs killed on contact, the associated risks are less than those when compared with deaths that occur from such social activities as drinking and smoking. But that argument does not really matter, for PCBs have **never caused one death in their fifty-plus years of existence.** In fact, American PCBs have never caused one illness,<sup>69</sup> except when they were heated. And

even then there were only reported cases of chloracne — a skin disorder not unlike teenage acne. And this was attributed to contaminants in the compounds used to make the PCBs — not the PCBs themselves.

## EPIDEMIOLOGIC STUDIES (15)

Our opponents in this matter have said that not enough epidemiologic evidence exists on which to make a decision of PCBs.<sup>70-71</sup> So they utilized animal tests. Below are over 15 epidemiologic studies that show **why** animal studies were needed by the radical environmentalists: **not one serious illness could be attributed to PCBs.**

The first epidemiologic study we would like to cite was conducted by Dr. Leonard Goldwater, a toxicologist working at Duke University and the University of North Carolina, with the EPA and with NIOSH. His observations of people who worked with PCBs came out in sworn testimony before a court of Law. The observations relate to his studies done for the Navy in 1943. The studies were conducted in four major cable factories (two in New York City, one in Rome, New York, and one in the San Francisco Bay area).<sup>72</sup>

In one of these plants in particular they were very, very sloppy in their work, and they were under great pressure to turn out as much cable as possible, they were working a lot of overtime and working around the clock three shifts a day, and the air was thick with the fumes from these things because they were heating them to impregnate the cable, and the workers were practically bathing in this stuff. They were not provided with any adequate shower facilities or work uniforms and they literally had their skins caked with the condensed insulating material which contained PCBs. Now, these are the ones who had the main difficulties. In one of the other plants — another extreme — they were careful, they had adequate ventilation, they had showers, they had work uniforms. There they had practically no problems at all.<sup>73</sup>

The "main difficulties" the people had was chloracne.

He also examined 3000 electricians in the Brooklyn Navy Yard who put this cable on the ships.

And they were examined for evidence of acne, chloracne — which were mentioned here the other day — and for evidence of any liver injury, which is the main organ that one would expect to be affected if there was any effect; and, just by examining these people and assuring them that nothing was happening and then re-examining any who were nervous about themselves, all of this fear and almost hysteria that had been whipped up by the news media very quickly subsided and

the shipbuilding effort resumed with the results we all know.<sup>74</sup>

After this discussion he was asked: "Doctor, with respect to the electricians, what conclusions or findings did you make with respect to the possible effects of the PCB mixtures on PCB compounds present in the insulation? **What effect did (it) have on the electricians?**" Dr. Goldwater "It frightened them because of what they read in the newspapers but it had no effect on their health."<sup>75</sup>

In the same court case, Dr. R. Emmitt Kelly, a "physician specializing in occupational disease and internal medicine" testified as to his observations of the effects PCBs had on human beings. Dr. Kelly was head of Monsanto's (the U.S. sole manufacturer of PCBs) Medical Department from 1946 to 1975.

**Question:** Doctor, did you examine employees who had had 1,000,000 PPM PCB compound on their skin?

**Dr. Kelly:** Yes

**Question:** What was the health of the employees you examined? What did you find when you examined these employees?

**Dr. Kelly:** With the exception of chloracne at our Anniston, Alabama plant, I did not find any ill effects in any of our Monsanto employees.<sup>76</sup>

Dr. Kelly then went on to say that probably only 50% of the total tonnage of materials going out of this plant were PCBs.<sup>77</sup> **He also said that he had observed workers who had been working with PCBs for as long as thirty years.<sup>78</sup>**

Capacitor workers probably received more exposure to PCBs than workers at PCB manufacturing plants did. A 1980 retrospective cohort mortality study of 2349 workers in two capacitor manufacturing plants was recently completed by NIOSH. **The total exposure of these men was 38,890 "man-years". Some of the workers had 38 years on the job, some as little as three months.<sup>79-80</sup>** The results, as shown below, are enough to turn one to animal tests.

Observed Deaths From	The Expected Norm	PCB Workers
Cancer	40.62	39*
Cardiovascular Disease	61.86	60
Nervous System Disease	12.3	11
Accidents	17.74	13
All Other Causes	41.62	40

\*There were no statistically significant excesses in specific types of cancer.

**In every instance it appears that the PCB exposed worker has a health advantage over his non-exposed counterpart!!!**

The major organ checked for carcinogenicity and other such problems in the animal studies was the liver. Therefore, one would expect that if any serious health problems were connected with PCBs, they would show up in the liver. This, however, is not the case. **A twenty-five year study on different cancers by the American Cancer Society shows that from 1950-52 to 1975-77 deaths from liver cancer has steadily decreased.** For men it has gone down by over 38% and for women by 53%.<sup>81</sup> **All this while the production of PCBs was increasing. If PCBs were as bad as the environmentalists claim, why should liver cancer be decreasing? It should be running away and creating statistics to justify the ban on PCBs.** Do you think they might be barking up the wrong tree?

Many epidemiologic studies have tested for impaired liver functions. Most deal with increased levels of enzyme production, something that occurs when a foreign substance enters the body. (Liver enzyme production is triggered, for example, by nicotine in cigarettes, charcoal-broiled meats with benzopyrene on it, birth control pills, BHT preservatives that are widely used in food, brussel sprouts, cabbage, and even stress.)<sup>82</sup> So what happens to workers exposed to PCBs? The next studies should reveal the answer to that question with respect to liver function.

## HUMAN LIVER STUDIES

Puccinelli, 1954, Italy. Men were exposed to heated Aroclor 1254 at a factory that produced capacitors impregnated with the chemical. This Aroclor was present in concentrations from 5-7 mg/m<sup>3</sup>. (International standard is 1 mg/m<sup>3</sup>). Three men, ages 18-24, developed chloracne after working in this area for 2-4 years. **"Other than chloracne, the men appeared healthy, and all findings, including liver function tests, were reported normal."**<sup>83</sup>

Inoue, 1975, Japan. Kauechlor 500 was involved at levels of 70.25 mg/m<sup>3</sup> and **no evidence** of impaired liver function was found.<sup>84</sup>

Karppanen and Kolho, 1972, Sweden. Six persons handled PCBs in an analytical lab and 12 worked in a plant where Aroclor 1242 was impregnated into capacitors. The capacitor workers had been at their job for 4 years. Special care was given to protecting their skin and the workroom air met internationally accepted standards (1/mg/m<sup>3</sup>). Subcutaneous adipose tissue was taken from two lab workers. The capacitor workers had the highest concentration of PCBs in their tissue, having 160, 285 and 635 ppm. **"All persons examined were in good health. The capacitor workers had been under special medical observation but the investigators were unable to detect any biologic effect from the PCBs."**<sup>85</sup> **No liver impairment was found.**

Kitamura, 1973, Japan. He studied 13 workers from an electrical capacitor manufacturing plant who had been exposed to PCBs for an average of 2½

years. Immediately after discontinuance of PCBs, the blood levels in the workers ranged from 320 to 2100 ppb, with the average at 820 ppb. After six months the mean fell to 200 ppb. "The authors concluded that PCBs probably had been an important factor in the etiology of the skin disorders and that results of blood tests, hepatic function and urinalyses were normal."<sup>86</sup>

Four other studies done on liver functions show slight increases in enzyme levels. Note that two of the studies involve inferior grade Japanese PCBs which are more likely to cause problems (inferior in the sense that they contain contaminants not found in U.S. grade PCBs).

**Meigs, 1954, America.** Workers were exposed to an unidentified PCB at 0.1 mg/m<sup>3</sup>. On seven of these workers, liver function tests were performed. Findings in six "were normal and, in the other one, cephalic flocculation and thymol turbidity tests were on the borderline of abnormality."<sup>87</sup> Which also means that it was on the borderline of normality.

**Hasegawa, 1972, Japan.** Ninety-nine workers exposed to Kanechlors from < 1 to 20 years at concentrations of 0.045 to 1.6 mg/n<sup>3</sup>. Blood levels averaged 370 ppb. "There was evidence of mild disturbances of liver function manifested by increased SGOT, SGPT, and SAP activities and decreased activity of serum cholinesterase...(BUT) these enzyme activity changes were not considered to be clinically significant."<sup>88</sup>

**Hara, 1973, Japan.** In this study, 38 current and 80 former capacitor workers were examined. The plant used PCBs from 1954-1972. Chloracne, which was reported by many, disappeared a year after discontinuance of exposure to PCBs (1 or 2 blackheads remained). "No correlation was apparent when concentrations of PCBs and triglycerides in the SERA of a large number of workers were compared graphically." However, of the nine workers who had blood concentrations 50 PPB, "five had elevated (how elevated?) triglyceride concentrations."<sup>89</sup>

**Ouw, 1976, Aroclor 1242.** This was a survey of 34 workers exposed to PCBs during the manufacture of capacitors. Nineteen workers filled capacitors with Aroclor 1242 heated to 70° C. The PCB concentration was 1.08-1.44 mg/m<sup>3</sup>. Fifteen assembled the Aroclor-dipped capacitors. PCB level in this air was .32 mg/m<sup>3</sup>. None of these workers used protective clothing. Twelve of the thirty-four "complained of mild burning and irritation of the face, eyes, skin, and five of these had exzematours rashes on the hands and legs. One filler had chloracne." Although "individual abnormalities were found in SGPT, SAP, and bilirubin, the average values for the exposed workers were within normal limits." *NIOSH went on to report that "the investigators reported no significant adverse responses to PCB exposure in the workers with blood PCB concentrations below 200 ppb"*<sup>90</sup>

**Levy, 1977, America.** Workers who had been exposed to an unidentified PCB at 0.013-0.264 mg/m<sup>3</sup> for 2½ to 18 years. Blood PCB concentrations ranged from 36 to 286 ppb. It is unlikely that skin exposure to solid or liquid PCBs was important with respect to their total exposure. Chloracne was not found, and neither was liver damage. "Liver function tests (SAP, SGOT, SGPT, total bilirubin) performed at the time of the study did not indicate current liver injury." (It was then mentioned that a review of past medical records showed "occasional finding indicative of slight liver injury"<sup>91</sup> (NOTE: seems to us that if PCBs are so harmful that the damage would be cumulative and not go away as this statement implies.)

The above 12 studies show the results of what happens when a person works with PCB: NOTHING. Except maybe some increased enzyme activities that are so slight that they don't hit the "abnormal", let alone "dangerous" range.

## SKIN EFFECTS

**If the liver is not adversely affected, then what is?** The skin, sometimes. In addition to the finding or non-findings of dermal disorders already mentioned in connection with the search for liver disorders and in Doctors Goldwater and Kelly's testimony, the remainder of cases of chloracne will presently be discussed.

In 1969, a 43 year old man got severe chloracne. He had put his hands in a PCB "mixture without skin protection for a long time...his clothes often became impregnated with the PCB." "It was reported that this was the first case of chloracne in the plant. Where more than 100 workers had been engaged in the process for more than 20 years."<sup>92</sup>

In 1964, 13 of 15 workers exposed to an Aroclor which was a mixture of bi- and terphenyls (65% chlorine content) developed chloracne. "An enamel containing the Aroclor was painted onto glass and then baked in an oven. Faulty ventilation caused contamination by chlorinated hydrocarbon vapors."<sup>93</sup> Note that this was not an electrical-grade PCB.

The General Electric Company gave testimony in 1975 about what its records showed concerning persons working with PCBs (in the matter of General Electric Company, File No. 2833, New York State Department of Environmental Conservation). The testimony related to two manufacturing facilities that used PCBs. Their records showed that, during the previous 15 years, only 49 cases of skin rashes and dermatitis had been reported to the dispensary. Of these 49 visits, 22 were second visits. Of the 49 complaints, only the fingers and hands were involved in 21 of the cases, only the arms, and hands in 5, only the face and legs in 1. Fourteen complaints were about a generalized skin rash. On sixteen other occasions, things like a burning sensation in the

eyes and nose, dizziness and nausea were reported. This latter group of people, along with those who complained twice, were taken off the job.<sup>94</sup> Think about these figures for a moment. Only 49 complaints in 15 years involving hundreds of people.

In 1950, Elkins reported that although the average concentrations of PCBs in the workroom air of several plants in Massachusetts ranged from 0.1 to 5.8 mg/m<sup>3</sup>, with maximums of 0.2 to 10.5 mg/m<sup>3</sup>. "No evidence of immediate toxic effects was observed except at PCB concentrations approaching 10 mg/m<sup>3</sup>, which the workers found unbearably irritating."<sup>95</sup>

The 1943 study by Karppanen and Kolho of Sweden, mentioned earlier, turned up no cases of chloracne. The subjects of the study had blood PCB levels of 74-1000 ppb and had been exposed to PCBs for 4 years in capacitor-impregnating operations.<sup>96</sup>

*It should now be clearly evident why animal studies are so widely quoted by those trying to ban PCBs. No evidence, along human lines, exists to support their position, and this after 50 years of exposure to PCB under the worst possible conditions. Animal studies, they claim, are needed to determine the long-term effects (they are looking for cancer) of exposure to PCBs. But not only are the results of the animal tests extremely questionable in their relevance to human experience, they are unneeded. For (one), a long-term mortality study has been done (38,000 man years of exposure, with a maximum of 38 years of exposure, seems pretty long-term to us) — probably the reason the results have not been very widespread relates to its finding of "no long-term effects from exposure to PCB," (two), over a twenty-five year period beginning in 1950-52, deaths from almost all cancers had decreased, and liver cancer, the expected site for PCB-caused cancers, has decreased between 39 and 53% (The exception, lung cancer, which has increased around 200% The "increase seen in both sexes due to cigarette smoking")<sup>97</sup> So if PCBs do cause cancer (which we are not in the least even intimating) then the number of cancers caused must not be very significant. **The long-term effects of PCBs on humans is that literally thousands of people in the United States have worked with PCBs since 1929 with no evidence of health problems whatsoever.** If the object is to determine deleterious effects of PCBs, then the simple thing to do would be to make a study of those people who died who worked with the PCBs and see what they died from.*

These figures could then be compared to national average and we could see exactly how harmful this chemical is. As it is, however, the only such story published completely exonerates PCBs.

With respect to the carcinogenic evidence against PCBs, NIOSH gives what turns out to be the basis for the demands that PCBs be banned. "In humans, there are no adequate studies to confirm or deny carcinogenicity."<sup>98</sup>

Our claim about the foundation of their case will be discussed later, but first let's finish the quotation "although preliminary data suggested that among Yusho patients, deaths due to cancers exceed expectations (160,161) and preliminary studies of two occupationally exposed groups in the U.S. indicate that the occurrence of certain cancers may be excessive (H.A. Sinclair written communication, June 1976, G. Roush, written communication, September 1976). However, the two reports are not consistent as to the types of cancers found to occur more frequently than expected."

Sinclair searched through the records of a petrochemical facility for employees who were "likely to have been exposed to Aroclor 1254 for various periods between 1949 and 1957." The 8 cancers that occurred out of a group of 92 "were not significantly more than would be expected," but the 3 melanomas and the 2 pancreatic cancers were significantly different from what calculated expectations.<sup>99</sup>

Two observations about this study would be appropriate at this point. **First** at a petrochemical factory there are many other chemicals present and it would therefore be both unreasonable and unscientific to use an example such as this to make any judgment on the carcinogenic potential of PCBs. **Second**, even in the Yusho incident, where all those other contaminants were present "there were no deaths from malignant melanoma, a tumor previously suspected to be linked to PCB exposure."<sup>100</sup>

Roush studied 300 current and former employees engaged in the manufacture of PCBs and found no malignant melanomas or pancreatic cancers. There was an excess of lung cancer, but these were not corrected for age or smoking habits.<sup>101</sup>

This sums up the epidemiologic evidence of what PCBs do to human beings. NIOSH says that "since 1970, PCBs have been one of the more thoroughly investigated environmental and occupational hazards."<sup>102</sup> This was in 1977. As late as January of 1981, however, statements such as "since the published epidemiologic evidence is limited we have utilized animal toxicology studies where appropriate in anticipating potential biologic effects in humans,"<sup>103</sup> were still being thrown around. One has to wonder if it is not the fact that a lack of epidemiologic studies that show that PCBs are harmful is what these people mean, for we have listed here 15 separate studies of the effects of PCBs on humans and have yet to turn up anything more serious than chloracne (Impotence and jaundice have been laid at PCBs doorstep. But the case against them involved a mixture of 90% tetra- and pentachloronaphthalenes and only 10% PCB.<sup>104</sup>)

## ENVIRONMENTAL CONCERN

Earlier in this paper it was mentioned that those pushing for a total ban on PCBs had built their case

on two foundations. **The one foundation** mentioned, which was discussed was animal studies, to which we added the epidemiologic studies to determine the relevance of the tests to human experience. **The other foundation** upon which their cases is built is that of environmental concern. "Concern about PCBs has, therefore, focused on their resistance to bio-degradation with the consequent potential for long-term or delayed health effects."<sup>105</sup> It is to this concern that we would now like to address ourselves.

The major environmental (and occupational) concern is the great stability of PCBs. They biodegrade very slowly, if at all. Due to their stability and to the fact that they are not readily metabolized, PCBs tend to build up (bioaccumulate) in the tissues of living organisms, so that if a person ate 27 µg/day for 70 years he would have close to all 0.68985 g ingested in him at his 70th birthday. He would lose some of it along the way, but how much, is not known.<sup>106</sup>

This **bioaccumulation** is especially marked in the lower-life forms. Suppose some seaweed has PCB in it. A little fish comes and eats lots of seaweed and the PCB from that seaweed accumulates in him. A bigger fish eats him and others like him and he ends up with an ever higher PCB level. Then a bird or human eats that fish and ends up with a major share of all the PCBs that those under him consumed. That's what is meant by bioaccumulation.

**Let's see how this looks in a real life situation.** The Great Lakes area, for example, one of the most PCB-contaminated bodies of water in the U.S. contains fish that have over 50 ppm PCB in their edible tissues.<sup>107-108</sup> The FDA at that time prohibited the sale of fish with over 5 ppm in their edible tissues.

As a brief, but useful, digression we would like to cite a study done in regards to this situation. It is useful because the greatest portion of PCBs that enter the human diet enter it via fish. The Michigan Department of Public Health conducted a study of 182 persons who regularly consumed sports fish. Over 40 ate the fish for more than ten years. Several ate over 100 pounds a year and 105 ate over 26 pounds a year. The mean PCB blood concentration for the exposed group was 73 ppb (cf. with 20 ppb for a nonexposed group). PCB levels ranged from 7 ppb for those who ate no fish to 366 ppb for a man who ate 132 pounds of fish a year. **The conclusion?**

"Evaluation of health histories and current medical problems of the study subjects failed to identify a significant difference between the exposed and comparison groups. Symptoms characteristic of reported PCB toxicity were not found nor did those with the highest PCB levels have a consistent pattern of complaints or conditions."<sup>109</sup>

But anyway, the concern is over the bioaccumulation of PCBs in the environment. Not all PCBs (209 different PCBs are possible) are alike. However, the degree of chlorination seems to be a determining

factor in the stability of the PCB as it relates to metabolism and biodegradation. It appears that the lower chlorinated PCBs (e.g., Aroclors 1242 and 1016) cause less severe reactions in animal tests<sup>110</sup> and as for the environment, the following statement was made at the 1975 EPA Conference on PCBs.

At least 1500 reports in scientific literature have been written relating to PCBs and, whereas most of these deal with only the question of reporting the presence of PCBs in the environment, invariably these reports describe and relate Aroclors 1254 and 1260, the more highly chlorinated PCBs produced by Monsanto.<sup>111</sup>

It was also claimed that "the EPA has stated that Aroclor 1242 bioaccumulates on the order of 8 times less than the more highly chlorinated Aroclors."<sup>112</sup>

Aroclor 1242 contains about 91% and Aroclor 1016 about 94% of the lower isomers, containing 4 chlorines or less that more readily biodegrade in the environment. Therefore, if some of these mixtures do enter into the environment "over 90% of the small amount that did enter into the environment would have relatively low persistence."<sup>113</sup>

Mr. Bernard Kerns of Westinghouse has stated that "Westinghouse utilizes primarily only two askarels (generic name), Aroclor 1242 for transformers and Aroclor 1016 for capacitors."<sup>114</sup>

NIOSH says that, prior to 1971, Aroclor 1242 was the major capacitor impregnant and after that date, it was Aroclor 1016. Transformers contained the more highly chlorinated Aroclors.<sup>115</sup>

It would thus seem that Aroclors 1242 and 1016 could be used in transformers and capacitors, providing the needed safety and minimizing the persistent elements that could enter the environment. And this is exactly what we believe should be done. It is the height of stupidity to persecute a chemical (and indirectly, the chemical industry) that has saved thousands of lives and thousands of buildings from destruction (NIOSH's evaluation):

There are currently no commercially available fluids which can be considered as totally acceptable substitutes for PCBs in the broad range of AC capacitors, nor are there substitute dielectric systems which would satisfy reliability and safety requirements in most applications. Transformers containing PCBs represent only about 5% of the U.S. transformer market, and are used only where safety and reliability are of prime importance...Major construction changes would be required to compensate for the fire-resistance of askarel-filled units if existing askarel-filled transformers are to be replaced with oil-filled units of equivalent electrical ratings."<sup>116</sup>

Just because it might "potentially" harm someone, NIOSH recommends that a standard be

set so that wherever more than one-millionth of a gram of PCB exists in 1000 liters of air only, a self-contained breathing apparatus with a full face piece operated in the positive pressure mode will provide adequate protection (to) workers' <sup>117</sup> Why this recommendation? "NIOSH concludes that PCBs in workplace air are **potential** carcinogens" (Emphasis ours) <sup>118</sup>

In fact, when it comes down to the bottom line, this is the whole argument of those who wish to ban PCBs. Not because they can prove that PCBs have harmed anyone, but because PCBs are "potentially carcinogenic". Why are PCBs considered "potentially carcinogenic"? For the same reasons that saccharin and formaldehyde<sup>119</sup> are considered potentially carcinogenic — if enough of a substance is fed to a rat, it will develop cancerous tumors. PCBs are considered "potentially carcinogenic" because some, but not all, animal tests have turned up cancerous substances. No evidence exists, apart from the animal tests, that would link cancer and humans. So until a human cancer is linked to PCBs, PCBs will be called "potential carcinogens", and radical environmental groups like the EDF will want them banned.

## THE REAL PROBLEM

But even this "ban" won't be complete. The EDF wants to destroy over 17 million mineral oil filled transformers that contain some PCBs in order to get rid of 400,000 pounds of PCBs. Yet 179,000,000 pounds of PCBs exist in the light fixtures, television sets and air conditioners that were manufactured up till the late 1970's <sup>120</sup> Their proposed ban doesn't even mention those things even though they contain almost 450 times the amount of PCBs. Why don't they go after those household items? Because it would make them look like the extremists they are when government employees entered into every household in America checking to see if everything was properly labelled or, in the case of a ban, confiscating all those items. If they are going to call for a ban, why not be consistent?

Everyone who has paint on his house that contains PCBs should have to take his house down to Arkansas and have it incinerated. All the carbonless copy paper stored in the filing cabinets in America would have to be destroyed. If PCBs are so "potentially carcinogenic" so as to warrant the destruction of our nation's transformers and capacitors, a **minor source of environmental PCB pollution**, then let's go the whole route and get rid of them completely.

Dr. Leonard Goldwater gave us the inspiration for our closing argument. He said:

'There is no substance known to man which cannot cause serious or fatal poisoning in large amount. And, by the same token, there is no substance known to man which cannot be tolerated in some dose' <sup>121</sup>

What we need to do is look at the risks involved with PCBs. They **have saved** thousands of lives. They **have** saved many buildings from destruction by fire. They **have** enabled America to grow industrially by answering the needs of the electrical industry. They **have not** seriously affected the health of anyone in their fifty-two years of existence. So before some law or regulation is passed that is going to cost one trillion dollars, or even one dollar, for that matter, those who want to pass it should be made to substantiate their case with more than a "potentially this or that". The American justice system is based on the presumption that one is innocent until proven guilty. America has the right to see the dead bodies <sup>122</sup> While they are vainly searching for their "dead body" or "smoking gun", let's discuss the costs of what will happen if the EDF gets its way and PCBs are banned from use in transformers and capacitors.

## ECONOMIC IMPACT

TMI's (Transformer Maintenance Institute) primary concern is that of PCB **contaminated transformer oil**. Pure PCB transformers and capacitors represent 750,000,000 pounds of PCB liquid to be destroyed along with the associated equipment (140,000 transformers, 10,000,000 capacitors).

But .

Oil filled transformers having 2 or 5 ppm of PCB contamination will probably be declared to be (outcome of EDF-EPA law suit) *pure PCB* as far as rules and regulations for marking, inventory storage and disposal is concerned. And herein lies the problem.

There is estimated to be 140,000 to 400,000 pounds of PCB in 1.4 billion gallons of transformer oil in 28 million transformers. To destroy this 400,000 pounds of PCB it will cost 1 TRILLION TWO HUNDRED SIXTY BILLION DOLLARS.

Now, if PCB was the most deadly substance in the world and would kill on contact, I would vote for its total destruction. But its 50 year track record plus the fact that it has provided these marvelous benefits tells me we should re-group and reconsider our position.

## OUR POSITION

The position that reflects reality, that will meet the requirements of all concerned — that is, health problems, industrial needs, economic needs is outlined below.

1. Transformer and capacitors containing pure PCBs, that is Aroclor 1242, 1248, 1254 and 1260, be continued in use, until end-of-life, without a time table phase out. If the equipment lasts for 80+ years, let it remain in service. (Considering the previous uses of PCBs in paints, fluorescent lighting fix-

- tures carbonless copy paper etc , it would be very difficult to say that even 10% of the environmental presence of PCBs has been due to transformers and capacitors)
- 2 All mineral filled transformers having PCB contamination up to the 2% level (20 000 ppm) be permitted to operate until end of life and be suitable for repair rewinding, or whatever is required to utilize the equipment to its fullest extent (Note 2% PCB represents the maximum level of PCBs in mineral oil which the transformer will tolerate and still perform its functions, because the solid insulation system of an oil filled transformer is not compatible with a higher concentration of PCB) Those oils having over 2% PCB be serviced to reduce this level to that which would make it reusable again in the transformer
- 3 Same as above except include
  - Voltage Regulators
  - Oil Circuit Breakers
  - Oil Switches
  - Oil Filled Cables

Japan Canada, Sweden and the U S A are the only countries banning PCBs PCBs are being manufactured by France, Germany and Russia and are being used world-wide It is inconsistent for the U S A , the only country to manufacture the purist PCBs in the world, and under the most stringent conditions — **to abandon all of the fantastic benefits to satisfy the radical environmentalists who have yet to present any evidence concerning the damage of PCB to humans or the ecology.**

If we were to approach this problem from strictly an engineering and environmental position, we would have to include this as our final recommendation

- 4 Permit production of PCBs for use as a dielectric in transformers and capacitors (after all, it is the most FANTASTIC dielectric fluid ever discovered and it is harmless, causing no problems to human health or the ecology)

But PCB has effectively been assassinated by the news media in much the same manner and with the same effectiveness as the liquidation of an Anwar Sadat, a John F Kennedy a Martin Luther King, et al The contribution that this liquid has made to our standard of living in the U S A and could contribute in the years to come is a sacrificial lamb It has been rightly called a "political pollutant" Perhaps when the full impact of the ban on PCB's shows up in an electric bill of \$1400 00 per month, instead of \$45 - 50 00 per month, the environmental extremists will be satisfied **The general public which will have to pay the enormous expense of destroying a harmless liquid** will have been raped again by the news media, who have become the mouth piece of the radical environmentalists

Our research of the records leads us to this conclusion Can you find another conclusion that is viable?

## ADDENDUM

The following information is from **INSIDE EPA** Weekly Report, Vol 2, No 42, October 16, 1981, page 12

### EPA PLANS MAJOR REWRITE OF CANCER POLICY TO CUT RELIANCE ON ANIMAL STUDIES

"EPA deputy administrator John Hernandez has made tentative plans to totally revamp the agency's cancer policy in the wake of a White House decision to scrap the Interagency Regulatory Liaison Group (IRLG) last month, according to sources, who are predicting that the **new policy will rely much less on animal studies** and thus dramatically reduce the number of potential carcinogens that the agency will find need to be regulated Sources say that some preliminary work on cancer policy has been done by outside consultants to Hernandez with one adding that the agency's decision not to move quickly on

formaldehyde (Inside EPA, Sept 25, p3) already reflects a "clear divergence" from current federal policy on studying carcinogens.

These sources are predicting that a new EPA policy will be formed that will incorporate fundamental limits on the importance of animal tests in determining carcinogenicity, with sources offering these possible approaches.

— establishing a threshold of effects in animal tests, where current federal policy places a value on carcinogenic effects however slight. (This policy change was hinted in an EPA staff background document on formaldehyde ),

—relating animal organ results to specific human organs, where current federal policy places weight on animal tests even if epidemiology has shown that the organs affected in animals are not affected in humans (also hinted at in EPA's staff formaldehyde paper),

—instituting a strict time-to-tumor coefficient, thus downplaying carcinogenic effects if the effects take a relatively long time to surface in animal tests, and

—requiring a definitive assessment of the "mechanism-of-action," i.e., whether a substance is directly carcinogenic or a catalyst (This requirement, scientists say, would require much more testing to replicate results, because not much is known about the direct carcinogen/catalyst relationship.)

The current federal cancer policy was developed by the IRLG, which was disbanded by George Keyworth, President Reagan's science advisor, last month. The body, made up of EPA, the Food & Drug Administration, the Agriculture Dept., the Occupational Safety & Health Administration, and the Consumer Product Safety Commission, will reportedly be replaced by a group called the Interagency Science/Health Coordination Group with Keyworth as chairman and many of the same players as the IRLG, but not the same mandate on federal policy decisions. Thus, each agency will be responsible for its own cancer policy, according to sources.

Agency sources report that the new EPA cancer policy is still in its early conceptual stages, with actual staff work to begin sometime in late fall. An early effort to codify IRLG policy in EPA practices, headed by Toby Clark last year, was put on hold in early spring, according to sources."

NOTE Please refer to page 7 of this paper where Drs. Goldwater and Gori speak of animal studies (Footnote references 52 and 53). The good news from **INSIDE EPA** is that EPA may now be listening to the scientific experts.

## THE EPIDEMIOLOGY OF PCBs

The following was received as this was going to press and we felt it important enough to include in this publication. The title is **The Epidemiology of PCBs**, which was presented on September 15, 1981 at the national meeting of the American Chemical Society by Dr. William R. Gaffey, manager of epidemiology at Monsanto Company and included 35 footnote references. Below are a few of the highlights of this article.

"The studies reviewed here fall into three categories. First, there are studies of accidental heavy exposures and the resulting acute and chronic effects. Second, there are studies of the relationship between exposure to PCBs and the resulting body burden of PCBs in serum or adipose tissue. The third category is studies that were done because the populations in question were known or suspected to be exposed to PCBs, rather than because some untoward health outcome had been observed first" (pp. 2 and 3).

"In summary, body burden of PCBs are clearly related to the level of exposure to environmental PCBs" (p. 10).

"However, most studies have shown that the occurrence of chloracne is not further associated with blood PCB levels. This suggests that (a) personal idiosyncratic factors may be involved and/or (b) that the high blood levels are an indicator of the existence of environmental contamination which actually produces chloracne by skin contact."

"The reports of dermatitis other than chloracne suffer from an additional complication. According to the National Health Survey, about one-third of all Americans of working age have at least one current skin condition serious enough to warrant evaluation by a physician." (pp. 13 and 14) (Footnote referenced from National Center for Health Statistics. Skin Conditions and Related Need for Medical Care Among Persons 1-74 years, U.S. 1971-1974. DHEW Pub. No. (PHS) 79-1660).

"The weight of evidence, as Smith et al. (footnote referenced Smith, AB et al. Metabolic and health consequences of occupational exposure to polychlorinated biphenyls (PCBs). Submitted for publication), conclude, is that no studies to date 'have shown that occupational exposure to PCBs is associated with any adverse health outcome, to be distinguished from demonstrable subclinical biochemical alterations'" (p. 17).

"Occupational exposure to PCBs at high levels has been associated with the occurrence of chloracne, but the relationship is not straightforward, suggesting that the actual risk of chloracne is also a function of individual susceptibility and personal work habits, as well as possible exposure to other contaminants."

"Dermatologic problems other than chloracne are associated with occupational exposure, and may be related to exposure to high chlorinated PCBs."

"Alterations of liver function and fat metabolism associated with PCB exposure have been observed in several studies, but are characterized by investigators as mild and of no clinical significance" (p. 21).

"Taken as a whole, the epidemiologic studies find that high occupational exposures to PCBs may cause dermatitis of various kinds, **but that there are no other clinically observable effects, including the occurrence of cancer.**" (p. 22).

"SUMMARY Twenty four published and unpublished reports covering 21 epidemiologic studies of human exposure to PCBs were reviewed and evaluated. The studies showed that high occupational exposures to PCBs have resulted in chloracne and dermatitis. Alterations in liver and fat metabolism were found in most studies that examined these functions, but there was no clinical illness associated with these alterations or with level and duration of exposure to PCBs. Studies to mortality rates in exposed populations have shown no pattern of cancer deaths related to PCB exposure" (p. 1).

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3. **Health Effects of Polychlorinated Biphenyls (PCBs), Polychlorinated Dibenzo-p-Dioxins (PCDDs), and Polychlorinated Dibenzofurans (PCDFs)**, (September 25, 1980), Report Number RD-80-001, pp. 9-11.
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20. *Ibid.*, p. 162.
21. **Toxicology of PCBs**, *op. cit.*, p. 1 and NIOSH, *op. cit.*, p. 118.
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23. *Ibid.*, pp. 79-81.
24. **Toxicology of PCBs**, *op. cit.*, p. 18.
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31. *Ibid.*, pp. 96-97.
32. *Ibid.*, p. 87.
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35. *Ibid.*, p. 75.
36. *Ibid.*, p. 69.
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38. *Ibid.*, pp. 86-87.
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118. *Ibid.*, p. 157.
119. Dr. Edward J. Gralla, Chief Toxicologist at Chemical Industry Institute of Toxicology, Research Triangle Park, North Carolina, on phone conversation August 2, 1981.
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121. *Court Case, Testimony of Leonard J. Goldwater, op. cit.*, p. 83.
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THESE ADDENDA AND CHANGES IN THE TEXT ON PAGES 3, 4, and 5 WERE MADE 10/20/86.

Addendum No. 2: The EPA published another "Final Rule" called the "Electrical Equipment" rule on August 25, 1982, which does not reflect the fact that more data is available indicating that PCBs are not a health problem: Drill, Friess, Hays, et al, "Potential Health Effects in the Human from Exposure to PCBs and Related Impurities."

Addendum No. 3: The EPA has now gotten away from referring to PCBs as "Toxic." They now apparently prefer to bring attention to the decomposition products of PCBs in a fire related incident. (PCBs have been used in transformers since the 1930s because they are "less flammable" than other materials.) The EPA published another "final rule" on July 17, 1985, addressing the risk of exposure to PCDDs and (to a lesser extent) PCDFs, partial oxidation products of PCBs. But, if PCBs are not harmful to human health even upon chronic exposure (which is not probable) why should their use be further regulated under the guise that a rare PCB fire might release PCDFs (which the "Yusho" people ate)? This "fire rule" is based on the occurrence of only a half dozen PCB-related fires in the entire USA. Further, there are no reported human exposure problems related to these incidents.

Addendum No. 4: Write to the American Council on Science and Health, 47 Maple Street, Summit, NJ 07901, for their 1986 document on, "PCBs: Is the Cure Worth the Cost?".

Inter-Office  
Correspondence

30-271-770.001

**ST REGIS**  
Corporation

S/20 P. Stoffer

From

R. F. Cashen

Location

Gulf Life Tower  
Jacksonville, FL

To

W. T. Myers  
Battle Creek

Date

July 23, 1984

TSCA Limits for PCB's in Wastewater

Do you have any information on the level of PCB in your  
mill effluent?

8/18/84

Paul

cc H. R. Emery  
J. B. Peebles

I've sent a reply  
to this. This is for  
your information  
and action where  
necessary. Zom



NATIONAL FOREST PRODUCTS ASSOCIATION

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API/NFPA Environmental and Health Program  
1619 Massachusetts Ave., N.W., Wash., D.C. 20036

July 17, 1984

11-v3

TO: Chemical Control Committee  
Water Executive Committee

RE: TSCA Rule on Incidental PCBs - Wastewater Effluent  
Limitations for PCBs Established

Enclosed please find a copy of EPA's final rule (49 FR 28172) on manufacturing, processing, distribution in commerce and use of "incidental" PCBs. The rule is of importance to our industry because it addresses PCBs present as contaminants in recycled paper products and process discharges.<sup>1</sup>

We are sending a copy of this final rule to both the Water and Chemical Control Committees because the rule establishes wastewater effluent limitations for PCBs discharged from mills processing "recycled PCBs."

The rule provides for exemption of "recycled PCBs" from the TSCA PCB ban when the following conditions are met:

- (1) The concentration of Aroclor PCBs in paper products leaving any manufacturing site or imported into the United States must have an annual average of less than 25 ppm with a 50 ppm maximum.
- (2) The release of Aroclor PCBs at the point at which emissions are vented to ambient air must be less than 10 ppm.
- (3) The amount of Aroclor PCBs added to water discharged from a processing site must at all times be less than 3 micrograms per liter (ug/l) for total Aroclors (roughly 3 parts per billion (3 ppb)).
- (4) Any other process wastes (e.g. sludge) above concentrations of 50 ppm PCB must be burned in a high-temperature incinerator or disposed of in a chemical waste landfill.

<sup>1</sup>The rule also provides for certain use authorizations for heat transfer and hydraulic systems containing contaminated PCB fluids.

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- (5) Records of any PCB monitoring that is done on product or process discharges must be kept for a period of three years after a process ceases operation, or for seven years, whichever is shorter.

Note: No particular level of monitoring is required either for product, air emissions or wastewater effluent.

(One other condition, relevant to asphalt roofing manufacturers, is that there be no detectable concentration of PCBs in asphalt roofing materials.)

Conditions (1), (2), (4), and (5) are identical to the ones that appeared in the December 1983 proposed rule. Condition (3), relating to wastewater discharges, was not addressed in the proposal but was added as a requirement in the final rule. Consequently, it came as a surprise, particularly because the agency did not at any time suggest that an effluent limitation would be established for recycled PCBs in the TSCA rule.

As many of you are aware, in November of 1982 EPA did propose under the Clean Water Act (CWA) BAT and NSPS effluent limitation guidelines for discharge of PCBs from deinking fine paper and tissue mills. The CWA proposal, which has not yet been finalized (final rule expected this fall), is referenced in the attached TSCA rule on page 28187. There the agency indicates that because it was under a court-ordered deadline for issuing the final TSCA rule, it was necessary to set final effluent limits for recycled PCBs "based on the data in the TSCA record and TSCA authority." The agency notes, however, that these limits may be superceded by more stringent limits established under the Clean Water Act.<sup>2</sup>

The 3 ug/l limit established in the final TSCA rule will apply to all paper facilities discharging Aroclor PCBs in their wastewater effluent. According to the preamble, the 3 ug/l limit is based on the level of quantitation (LOQ) of Aroclor PCBs in wastewater discharges. (The LOQ is the lowest level of a substance that can be reliably measured by a given analytical method. The analytical method indicated for Aroclor PCBs is gas chromatography using electron capture detection.)

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<sup>2</sup> The proposed effluent limitations contained in the November 1982 CWA proposal were as follows:

	<u>Deinking</u>	
	<u>Fine Paper</u>	<u>Tissue</u>
BAT	1.4 ug/l	1.8 ug/l
NSPS	1.6 ug/l	1.8 ug/l

A preliminary review by NCASI of the data on PCBs in paper mill effluents (data available at the time of the 1982 effluent guidelines proposal) suggests that the 3 ug/l discharge limit may not be troublesome for our industry based on average discharge levels available in 1982. However, excursions are possible, and as the rule does not indicate specific monitoring requirements it is not clear how troublesome such excursions would be. NCASI is conducting further analysis of the data, and upon completion of their work, we will be in a better position to assess the situation, and to consider what if any actions industry may need to take.<sup>3</sup>

There is a further concern as to how the EPA Enforcement Division will choose to interpret monitoring and reporting with respect to the discharge limit. The rule describes recycled PCBs as the amount added to water discharged from a processing site. This may not pose a particular problem for the direct dischargers with an NPDES permit and monitoring occurring at the "end of the pipe." However, we have some concern as to where such monitoring or reporting would occur for the indirect dischargers (those discharging into publicly-owned treatment works (POTW)).

The proposed regulation for the deink mills specifically recommended not establishing pretreatment standards for PCBs since (1) deink subcategory wastewaters do not interfere with the operation of POTWs, and (2) significant removals of PCBs occur at POTWs. The TSCA rule potentially could force the indirect dischargers into unnecessary pretreatment.

Should you have any technical information (in particular effluent data) on this subject that you feel may help, please contact Bill Gillespie at NCASI (212/532-9000). In the meantime if you have any question about the TSCA rule, please feel free to contact either of us at the telephone numbers below.

John L. Festa  
Director, Chemical Control Programs  
(202/797-5790)

Patricia K. Hill  
Director, Water Quality Programs  
(202/797-5782)

Attachment

cc: BCT Task Force  
NPDES Task Group  
Phase III Task Group  
API-NY (env)

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<sup>3</sup> The effective date of the TSCA regulation is October 1, 1984. The deadline for filing court challenges to the rule, should that be necessary, is September 24, 1984.

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**40 CFR Part 761****[OPTS-62032A; TSH-FRL-2587-1]****Toxic Substances Control Act;  
Polychlorinated Biphenyls (PCBs)  
Manufacturing, Processing,  
Distribution in Commerce, and Use  
Prohibitions; Exclusions, Exemptions,  
and Use Authorizations****AGENCY:** Environmental Protection  
Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** The Toxic Substances Control Act (TSCA), 15 U.S.C. 2605(e), generally prohibits the manufacture, processing, distribution in commerce, and use of polychlorinated biphenyls (PCBs). EPA issued a final rule published in the Federal Register of October 21, 1982 (47 FR 46980), excluding PCBs generated in closed and controlled waste manufacturing processes from the TSCA prohibitions. This final rule amends the October 21, 1982 rule by excluding additional processes from regulation, based on EPA's determination that PCBs generated in these processes do not present an unreasonable risk of injury to health or the environment. In addition, this notice defers action on 49 exemption petitions to manufacture, process, and distribute PCBs in commerce; authorizes the use of PCBs in heat transfer and hydraulic systems at concentrations of less than 50 parts per million (ppm); and authorizes the use of PCBs in the compressors and in the liquid of natural gas pipelines at concentrations of less than 50 ppm.

**DATES:** These regulations shall be considered promulgated for purposes of judicial review at 1:00 p.m. eastern standard time on July 24, 1984. These regulations shall become effective on October 1, 1984.

**FOR FURTHER INFORMATION CONTACT:** Edward A. Klein, Director, TSCA Assistance Office (TS-799), Office of Toxic Substances, Environmental Protection Agency, 401 M St. SW., Washington, D.C. 20460, Toll Free: 1-800-424-9065, In Washington, D.C.: (554-1404). Outside the USA: (Operator-205-554-1404).

**SUPPLEMENTARY INFORMATION:** OMB Control Number: 2070-0008.

**I. Overview of This Final Rule**

In today's rule, EPA is taking four actions concerning PCBs. These actions are: (1) An amendment of the October 21, 1982 Closed and Controlled Waste Manufacturing Processes Rule; (2) a deferral of action on 49 exemption petitions to manufacture, process, and distribute in commerce inadvertently generated PCBs; (3) a use authorization for PCBs in hydraulic and heat transfer fluid; and (4) a use authorization for PCBs in the compressors and liquid of natural gas pipeline systems. Units II, III, IV, and V, respectively, discuss these actions in detail.

**II. Amendment to the Closed and Controlled Waste Manufacturing Processes Rule****A. Overview of This Amendment**

This rule will permit the manufacture, processing, distribution in commerce, and use of inadvertently generated and recycled PCBs under limited circumstances. It is based on a determination that exposure to these PCBs would not present an unreasonable risk to health or the environment. This determination takes into account the effects from exposure to inadvertently generated and recycled PCBs, as well as the cost of controlling these PCBs. The regulatory history of this amendment and the no unreasonable risk determination are described in greater detail in the remainder of this Unit of the preamble.

EPA emphasizes that while today's rule sets certain limits on inadvertently generated and recycled PCBs released to air, water, products, and waste in certain processes, the Agency is not implying that these release limits represent an absolutely safe level. Rather, the Agency has decided that the risks associated with allowing the levels of PCBs in this regulation are not unreasonable. This means that EPA has set these levels based on a balancing of the costs associated with setting even lower limits (or removing PCBs entirely from the products in question) with the attendant reduction in risk that would result from stricter regulation. EPA has concluded that stricter regulation would result in great expense for a small increment in risk reduction.

**B. Background**

Section 6(e) of TSCA generally prohibits the manufacture, processing, distribution in commerce, and use of PCBs. Section 6(e)(3)(B) of TSCA provides that any person may petition EPA for one-year exemptions from the prohibitions on manufacture, processing, and distribution in commerce of PCBs. EPA may grant such petitions, by rule, if the following two conditions are satisfied: (1) The exemption, if granted, would not present an unreasonable risk of injury to health or the environment; and (2) good faith efforts have been made to develop a PCB substitute which does not present an unreasonable risk of injury. In addition, section 6(e)(2) of TSCA permits EPA to exempt from the PCB ban totally enclosed uses of PCBs and authorizes EPA to allow continuation of non-totally enclosed uses of PCBs if the uses will not present an unreasonable risk of injury to health or the environment.

In the Federal Register on May 31, 1979 (44 FR 31514), EPA issued a regulation to implement the prohibitions of section 6(e) of TSCA. (This rule is hereafter referred to as the PCB Ban Rule.) Among other provisions, that rule: (1) Generally excluded from regulation materials containing PCBs in concentrations of less than 50 ppm; (2) designated all intact, non-leaking capacitors, electromagnets, and transformers (other than railroad transformers) as "totally enclosed," and permitted their use without specific conditions; and (3) authorized 11 non-totally enclosed uses of PCBs, based on the finding that they did not present unreasonable risks.

The Environmental Defense Fund (EDF) obtained judicial review of the PCB Ban Rule in the U.S. Court of Appeals for the District of Columbia Circuit in *EDF v. EPA*, 636 F.2d 1287 (D.C. Cir. 1980). On October 30, 1980, the court invalidated the regulatory exclusion of PCBs in concentrations of less than 50 ppm and EPA's determination that the use of PCBs in electrical equipment was "totally enclosed." However, the court upheld the use authorizations. This rule was remanded to EPA by the court for further action consistent with its opinion.

The issuance of the court's mandate without a stay would have adversely affected many industries throughout the United States, including both the electrical utility industry and certain segments of the chemical industry whose processes inadvertently generated PCBs as impurities or byproducts in concentrations below 50 ppm. Accordingly, on January 21, 1981, EPA, EDF, and certain industry intervenors in *EDF v. EPA* filed a joint motion with the court. The motion asked for a stay of that part of the court's mandate which set aside the designation of transformers, capacitors, and electromagnets as totally enclosed. During the period of the stay, EPA agreed to conduct a rulemaking on the use of PCBs in electrical equipment. On February 12, 1981, the court granted this joint motion. EPA subsequently addressed the use of certain electrical equipment containing PCBs in a rule, which was published in the Federal Register of August 25, 1982 (47 FR 37342). This will be referred to hereafter as the Electrical Equipment Rule.

The genesis of today's rule was another joint motion filed by the Chemical Manufacturers Association (CMA), EDF and other industry intervenors in *EDF v. EPA* on February 20, 1981. That motion sought a stay of

that part of the court's mandate overturning the 50 ppm cutoff established in the PCB Ban Rule. This motion also proposed that during the period of the stay: (1) EPA would conduct new rulemaking with respect to PCBs generated in low concentrations; and (2) industry groups would initiate studies to provide new information for subsequent rulemaking. A brief history of the events subsequent to the February 20, 1981 motion will explain how EPA arrived at today's rule.

Throughout the discussions leading to the February 20, 1981 joint motion, chemical industry representatives argued that some of their manufacturing processes inadvertently generate PCBs that present virtually no health or environmental risk because of limited PCB exposure potential. Industry representatives stated that some processes generating PCBs as byproducts are designed and operated so that no releases of PCBs occur or that the PCBs formed in the processes are disposed of in accordance with the PCB disposal regulations at 40 CFR 761.60. These processes were referred to as "closed manufacturing processes" and "controlled waste manufacturing processes," respectively. The joint motion proposed that EPA issue an ANPR to exclude these closed and controlled waste manufacturing processes from the prohibitions of section 6(e) of TSCA.

In addition to addressing the closed and controlled waste manufacturing processes, the February 20, 1981 joint motion also proposed the publication of an ANPR requesting information on all other manufacturing, processing, distribution in commerce, and use of PCBs in low concentrations. Such PCBs generated in and released from other than closed or controlled waste manufacturing processes are hereafter referred to as "uncontrolled PCBs" or "inadvertently generated PCBs." These PCBs which are not intentionally generated are also referred to as "non-Aroclor" PCBs. These non-Aroclor, inadvertently generated, PCBs are the principal subject of this rulemaking.

On April 13, 1981, the court entered an order in response to the February 20, 1981 joint motion. That order stayed the issuance of the court's mandate with respect to activities involving PCBs in concentrations of less than 50 ppm. Thus, the 50 ppm regulatory limit established in the PCB Ban Rule remains in effect for the duration of the stay, and persons who manufacture, process, distribute in commerce, and use PCBs in concentrations of less than 50 ppm may continue these activities during the stay.

However, once the stay is lifted, any activity involving any quantifiable level of PCBs (as discussed in this notice) is banned unless that activity is specifically excluded, exempted, or authorized by regulation.

The court order of April 13, 1981 required EPA to take three actions. EPA was required to: (1) Issue ANPRs covering PCBs in concentrations of less than 50 ppm; (2) promulgate a final rule by October 13, 1982 to exclude generation of PCBs in closed and controlled waste manufacturing processes from the prohibitions of sections 6(e)(3)(A) of TSCA; and (3) advise the court by March 13, 1982 of EPA's plans and schedule for further action on PCBs generated as uncontrolled PCBs in concentrations of less than 50 ppm.

EPA issued two ANPRs on the 50 ppm regulatory limit which were published in the Federal Register of May 20, 1981 (46 FR 17617 and 46 FR 17649). The ANPRs established two separate rulemaking proceedings with respect to PCBs in concentrations of less than 50 ppm. The first ANPR announced rulemaking activities on PCBs generated in closed and controlled waste manufacturing processes. The second ANPR announced the rulemaking activities for uncontrolled PCBs.

In accordance with the April 13, 1981 court order, EPA on March 11, 1982 submitted a report to the court that set forth EPA's plans for further regulation of uncontrolled PCBs. Since the number of processes generating uncontrolled PCBs is related to the number of closed and controlled waste manufacturing processes, EPA requested that the court allow EPA to report on its further plans for regulation of uncontrolled PCBs following the completion of the Closed and Controlled Waste Manufacturing Processes Rule. EPA also requested that the court extend its stay of mandate until December 1, 1982, to allow EPA time to develop detailed plans for regulating uncontrolled PCBs after issues were resolved in the Closed and Controlled Waste Manufacturing Processes Rule. On April 9, 1982, the court issued an order granting EPA's request.

The Closed and Controlled Waste Manufacturing Processes Rule was published in the Federal Register of October 21, 1982 (47 FR 46960). That rule provides an exclusion from the general ban on the manufacture, processing and distribution in commerce of PCBs for closed and controlled waste manufacturing processes. The Closed and Controlled Waste Manufacturing Processes Rule sets the limits for

inadvertently generated, non-Aroclor PCBs in products, air emissions and water discharges at the limit of quantitation (LOQ) and controls disposal of waste containing PCBs above the LOQ. These exclusions from the prohibitions of section 6(e) of TSCA were based on EPA's determination that risk would be *de minimis*, because there would be no measurable gain in protection of the environment or public health by attempting to regulate PCBs at levels that are nonquantifiable for all practical purposes. This environmentally conservative approach was taken because data were not available at that time to determine if higher concentration levels were appropriate.

### C. Background for Today's Amendment

After issuing the final Closed and Controlled Waste Manufacturing Processes Rule, EPA in accordance with the April 9, 1982 court order, submitted to the court a plan for regulating uncontrolled PCBs. EPA stated that it intended to propose a rule by December 1, 1983 and to issue a final rule for uncontrolled PCBs by July 1, 1984. EPA also requested an extension of the court's stay of mandate until October 1, 1984. In response to this request, the court on December 17, 1982 stayed the mandate until further order. In addition, the court ordered EPA to submit a progress report on March 31, 1983 and quarterly thereafter. In accordance with this December 17, 1982 order, EPA submitted progress reports at the end of March, June, September and December 1983; March and June 1984.

On April 13, 1983, CMA, EDF, and the Natural Resources Defense Council (NRDC) presented a document to EPA entitled "Recommendation of the Parties for a Final EPA Rule on Inadvertent Generation of PCBs." This document represents a consensus proposal of CMA, EDF, and NRDC and was the culmination of an independent negotiation effort between those parties that began in mid-1982.

The consensus proposal was designed to allow the manufacture of chemicals in processes that inadvertently generate PCBs if certain conditions are met. In the consensus proposal, EDF, NRDC, and CMA proposed five basic conditions that would have to be met in order to qualify for an exclusion from the TSCA section 6(e)(3)(A) prohibitions. These conditions were:

1. Concentrations of inadvertently generated PCBs in products are to be limited to a 25 ppm average per year and a maximum of 50 ppm at any given time

2. Concentrations of inadvertently generated PCBs at the point where such PCBs are vented to the ambient air are to be less than 10 ppm.

3. Concentrations of inadvertently generated PCBs discharged from manufacturing sites to water are to be less than 0.1 ppm for any resolvable gas chromatographic peak.

4. The concentration of PCBs described in item 1 is to be calculated after dividing the concentration of monochlorinated and dichlorinated biphenyls by factors of 50 and 5, respectively.

5. Various certification, reporting, and record maintenance requirements must be met to qualify for this exclusion from the general ban on manufacture, processing, distribution in commerce, and use of PCBs.

Further, the consensus proposal included an "upset provision." This provision would have provided an affirmative defense for those manufacturing situations in which PCB levels released are higher than would be allowed by the rule, provided that such releases are due to factors beyond the control of the operator.

Based on the data analyses EPA had completed when it received the consensus proposal, the Agency determined that it was appropriate to use the consensus proposal as a framework in this rulemaking. In a letter to CMA, EDF, and NRDC dated June 3, 1983, EPA stated that it would use the consensus proposal as a framework for regulation, although it intended to make modifications to that framework.

EPA also received information from a number of sources on PCBs that are recycled. Recycled PCBs are PCBs that were generated in the past and may enter certain limited manufacturing processes as PCB-contaminated raw materials. In general, these are intentionally generated PCBs (i.e., Aroclor) that are found in low concentrations.

On December 1, 1983, the Agency issued the proposed Uncontrolled PCBs Rule. Three actions were proposed in that notice: (1) An amendment to the Closed and Controlled Waste Manufacturing Processes Rule that would exclude additional activities from the TSCA section 6(e) PCB ban; (2) a deferral of action on 50 petitions previously filed under section 6(e)(3)(B) of TSCA for exemptions from the PCB regulations (see Unit II.B for an explanation of exemption petitions), and (3) a use authorization for PCBs in heat transfer and hydraulic systems.

In determining the legal basis for this Uncontrolled PCBs Rule, EPA decided to

adopt an approach under which the Agency will authorize those PCB activities which do not present unreasonable risks. This approach was suggested by CMA, EDF and NRDC in their consensus proposal. EPA's reason for adopting this approach is explained in the preamble to the proposed regulation at 48 FR 55079. The concept of unreasonable risk is explained further at 48 FR 55081.

To determine which processes would be affected by this rulemaking, EPA developed a list of approximately 200 chemical processes with a potential for generating PCBs. These chemical processes were then ranked as high, moderate, or low with respect to their potential to generate PCBs. EPA identified 70 chemical processes that were believed to have a high potential to inadvertently generate PCBs. Some of the processes included in this list were identified in petitions for exemption from the PCB Ban Rule that were previously submitted to EPA. The Agency focused on this group of 70-chemical processes in developing its assessments of environmental and human health exposures used to support this rulemaking.

The major difference between the criteria proposed by the Agency and the consensus proposal criteria is the addition of a concentration limit of 5 ppm for PCBs in consumer products with a high potential for exposure. These consumer products were deodorant bars and soaps, and plastic building materials and products. EPA also did not propose the "upset" provision suggested in the consensus proposal.

In response to the proposed rule, over thirty comments were submitted to the rulemaking record. No outside parties requested a public hearing in this rulemaking; therefore, no hearings were held.

#### *D. General Comments on the Proposed Amendment*

The majority of the comments received in this rulemaking generally agreed with the exclusions proposed in the December 8, 1983 Federal Register notice. However, many modifications to the rule and the supporting documents were suggested by the commenters. This Unit of the Preamble discusses many of the general comments made in response to the proposed rule. Unit F generally discusses the health effects and exposure assessment support documents and comments made with respect to these support documents. For further information concerning all of the comments made in response to the proposed rule, please refer to the support document "Response to

#### *Comments on the Proposed Uncontrolled PCBs Rule."*

A number of comments were made on the exclusion for consumer products with a high potential for exposure. Several commenters pointed out that deodorant bars are regulated by the Food and Drug Administration (FDA); therefore, these products may not be regulated under TSCA. EPA informed EPA that appropriate terminology for this type of product that is not controlled by FDA is "detergent bars." EPA agrees with these points. Accordingly, the wording "soap and deodorant bars" has been changed to read "detergent bars" as suggested by the FDA.

Similarly, several commenters suggested that EPA should delete from the "plastic building materials and products" designation the words "and products" because those words are redundant. Other commenters suggested that plastic building materials and products should be removed altogether from the category of "consumer products with a high potential for exposure." In response to these comments, the Agency reevaluated the relevant exposure assessment, and determined that the exposure is not as great as originally estimated. The modifications to the exposure assessment are explained in the "Response to Comments on the Proposed Uncontrolled PCBs Rule." Accordingly EPA has removed plastic building materials and products from the "consumer products with a high potential for exposure" category. The PCB concentration in plastic building products will be limited to an annual average of 25 ppm PCBs with a 50 ppm maximum.

A number of commenters were uncertain as to which Aroclor products were to be included under the definition of recycled PCBs. In today's rule, EPA clarifies this issue by stating that the only PCBs permitted to be recycled are those Aroclor PCBs that enter the paper or the asphalt roofing manufacturing process as PCB-contaminated raw materials. The discounting factors for monochlorinated and dichlorinated biphenyls are not to be used in quantifying the recycled PCBs. EPA chose these products because information submitted to the Agency showed that these were the only products in which raw materials contaminated with Aroclor PCBs were used in a manufacturing process.

EPA has received information on recycled PCBs from the American Paper Institute (API) and the Asphalt Roofing Manufacturers Association (ARMA). API stated that its members have

detected PCBs in paper, pulp, and paperboard products. It believes that ambient PCBs are the source of the PCBs found in its members' products. ARMA, which represents about 15 companies, stated that asphalt roofing manufacturers have detected PCBs in asphalt roofing waste streams as a result of PCBs found in the waste oil used to adjust the viscosity of the asphalt. The PCBs are present in the waste paper used in the production of roofing felt, and in the asphalt used for saturation of the felt. PCBs have not been detected in the final asphalt roofing product.

Two commenters stated that since the LOQ for Aroclor PCBs in water is much lower than the LOQ described for non-Aroclor PCBs, permissible discharges of recycled PCBs (Aroclor PCBs) should be set at this lower LOQ level. Setting this limit for recycled PCBs is appropriate based on the environmental risk assessment. EPA agrees with these comments concerning the LOQ for Aroclors. Therefore, the Agency is modifying the discharge limit to water (see Unit II.K.3). EPA is setting the discharge limit for recycled Aroclor PCBs at roughly 3 parts per billion (ppb). EPA's reasons for setting the limit are explained further in this rulemaking record. Unit VI.D of this preamble also explains the relationship of this Aroclor LOQ to EPA's activities under the Clean Water Act.

Several commenters questioned the designation of certain chemical processes as having a high potential to inadvertently generate PCBs. EPA agrees that not all of the processes included on that list in the proposed rule inadvertently generate PCBs. The Agency has also determined that several other processes which inadvertently generate PCBs are not on that list. The Agency intended that this list be used only as a guide in developing a regulatory strategy for PCBs. The act of inadvertently generating PCBs is the primary consideration in deciding if a process needs to be certified as an excluded manufacturing process, not the fact that the process does/does not appear on the list of chemical processes with a high potential to inadvertently generate PCBs.

#### E. Today's Final Rule

Based on the considerations mentioned above and other information available to the Agency, EPA is modifying the criteria for exclusion from the prohibitions of section 6(e) of TSCA that were proposed on December 8, 1983. Today's rule excludes those PCB activities (including manufacture, processing, distribution in commerce,

and use) that meet the criteria outlined below:

1. Inadvertently generated PCB concentrations in the components of detergent bars are limited to less than 5 ppm.

2. Inadvertently generated PCB concentrations present in all products except detergent bars are limited to an annual average of 25 ppm with a 50 ppm maximum. PCB concentrations in recycled paper are limited to an annual average of 25 ppm with a 50 ppm maximum.

3. Inadvertently generated and recycled PCB concentrations at the point where such PCBs are manufactured or processed and are vented to the ambient air are limited to less than 10 ppm.

4. Inadvertently generated PCB concentrations discharged from manufacturing or processing sites to water are limited to less than 0.1 ppm for any resolvable gas chromatographic peak. Recycled PCB concentrations discharged from manufacturing or processing sites to water are limited to less than 3 micrograms per liter ( $\mu\text{g}/\text{l}$ , roughly 3 ppb) total Aroclors.

5. All process wastes containing inadvertently generated or recycled PCBs at 50 ppm or greater PCBs are to be disposed of in accordance with the PCB disposal requirements of 40 CFR 761.60.

6. Quantitation of inadvertently generated PCBs to meet the criteria in items 1 through 5 is to be calculated after discounting the concentration of monochlorinated biphenyls by a factor of 50 and dichlorinated biphenyls by a factor of 5. These discounting factors do not apply to recycled PCBs.

7. The certification, reporting, and record maintenance requirements must be met.

#### F. Effects on Human Health and the Environment

CMA, EDF, and NRDC stated in the consensus proposal that while the parties to the consensus have different views on the toxicology of PCBs, they believe that their recommendation would assure an absence of unreasonable risk. According to the consensus proposal, the parties determined that it was not necessary to discuss the toxicology of PCBs in order to resolve this problem. The parties felt that a broad-based consideration of the health effects would only lead to further litigation.

To determine whether a risk is unreasonable section 6 of TSCA requires a balancing of the potential for harm from exposure as a result of manufacture, distribution in commerce, use, and disposal of the chemical under

consideration against the cost to society of placing restrictions on that chemical. Specifically, TSCA requires that the following factors be considered:

1. The effects of inadvertently generated and recycled PCBs on human health and the environment.
2. The magnitude of exposure of these PCBs to humans and the environment.
3. The benefits of using those products containing PCBs.
4. The economic impact of this rule upon the national economy, small business, technological innovation, the environment, and public health.

EPA has considered these factors in determining that there is no unreasonable risk from an excluded activity as well as the qualitative approach recommended in the consensus proposal. Based on this information, EPA is conditionally excluding from regulation under section 6(e) of TSCA the manufacture, processing, distribution in commerce, and use of certain inadvertently generated non-Aroclor PCBs and the processing, distribution in commerce, and use of recycled PCBs in certain processes. This decision is based on a finding that such PCBs present no unreasonable risk of injury to human health and the environment.

#### 1. Effects on Human Health

Toxicity and exposure are the two basic elements of risk. EPA considered both of these elements in determining the potential risks associated with PCBs and in deciding whether to grant an exclusion.

*a. Health effects.* The toxic effects of PCBs have been previously described in various documents that are part of the rulemaking record for the May 31, 1979 PCB Ban Rule and the August 25, 1982 Electrical Equipment Rule. EPA summarizes these findings here.

EPA has determined that PCBs are toxic and persistent. PCBs can enter the body through the lungs, gastrointestinal tract, and skin; circulate throughout the body; and be stored in the fatty tissue. In addition, EPA concludes that PCBs may cause chloracne, reproductive effects, developmental toxicity, and oncogenicity in humans exposed to PCBs. Available data show that some PCBs have the ability to alter reproductive processes in mammalian species, sometimes even at doses that do not cause other signs of toxicity. Data from studies using animals and limited available epidemiology data indicate that prenatal exposure to PCBs can result in various degrees of developmentally toxic effects. Postnatal effects have been demonstrated in

immature animals, following exposure to PCBs prenatally and via breast milk.

Available studies using animals indicate an oncogenic potential for PCBs. Available epidemiology data, however, are not adequate to confirm or negate oncogenic potential in humans at this time. Further epidemiology research would be needed to correlate data from humans and animals. However, when considered with all the other information, EPA finds no reason to suggest that the data from animals would not predict an oncogenic potential in humans.

In some cases chloracne has occurred in humans exposed to PCBs. Severe cases of chloracne are painful, disfiguring, and may persist for long time periods before the symptoms disappear. Although the effects of chloracne may be reversible, EPA considers these effects to be significant. Since the administration of PCBs to experimental animals results in tumor formation, reproductive effects and developmental toxicity, EPA finds that there is the potential to produce these effects in humans exposed to PCBs.

During the comment period on the proposed Uncontrolled PCBs Rule, a number of commenters presented additional information about the health effects. In particular, the National Electrical Manufacturers Association submitted a document prepared by Drill et al. A more detailed analysis of these comments is presented in EPA's support document "Response to Comments on the Proposed Uncontrolled PCBs Rule."

The health and environmental effects issues raised by these commenters have been considered by EPA throughout the long history of its rulemakings on PCBs under the Clean Water Act (42 FR 6532, February 2, 1977) and TSCA (44 FR 31514, May 31, 1979). Issues on the health effects of PCBs have been the subject of litigation in two cases before the United States Court of Appeals for the District of Columbia Circuit, 636 F.2d 1267 (1980); 598 F.2d 62 (1978). The administrative record in this proceeding contains well over one hundred documents discussing the effects of PCBs.

As EPA has stated numerous times, the health and environmental effects of PCBs are of concern to the Agency. However, the Agency has acknowledged conflicting interpretations of the scientific data and disagreements as to the weight to be assigned to particular data in making regulatory decisions. These conflicts have been noted by industry and environmental group commenters throughout the PCB rulemaking proceedings under both the Clean Water Act and TSCA. The

comments submitted in the proceeding on today's rule point out the same problems with conflicting interpretation of scientific evidence and disagreements over regulatory policymaking.

There is little value in revisiting these issues concerning the health and environmental effects of PCBs without substantial new information. While a number of new studies have been conducted on PCBs, those studies have not been sufficient to change any of EPA's findings with respect to the health and environmental effects of PCBs. Nevertheless, EPA has reviewed the data submitted by the commenters, which includes information previously submitted to the Agency, as well as new studies. EPA has determined that there is no reason to change its conclusions as to the hazards of PCBs.

*b. Exposure assessment.* Results of the National Human Adipose Tissue Survey conducted by EPA indicate that the estimated fraction of the national population having greater than 3 ppm of PCBs has decreased from 8 to 1 percent between 1977 and 1981, after increasing from 2.7 to 8 percent between 1972 and 1977. These data indicate that exposure of the U.S. population to PCBs is decreasing.

EPA conducted an exposure assessment to determine whether EPA could exclude materials containing PCBs at low concentrations from the statutory ban on PCBs without endangering human health or the environment. Few data were available to EPA regarding actual exposure to inadvertently generated and recycled PCBs. Therefore, for each potentially exposed population, EPA originally developed "maximum hypothetical exposures." EPA used the maximum hypothetical exposures as a screening device. Where the maximum hypothetical exposure level associated with a PCB concentration of 50 ppm was very low, no further work was done for this particular hypothetical exposure. Instead, the Agency concentrated on those situations where the estimated exposure levels were high. Assumptions for these hypothetical exposures were refined to obtain better and more reasonable worst-case estimates. Thus, for all of the estimated exposures presented in the support document, actual exposures are expected to be no more than the estimated exposures.

Included among the hypothetical exposure situations developed for this assessment are occupational, consumer, and general population exposures to PCBs through ingestion, inhalation, and dermal absorption. EPA also developed exposure assessments for recycled Aroclor PCBs. All of these exposure situations were designed to represent

high frequency or duration of use (maximum hypothetical exposures).

After the exposure assessment was conducted, EPA found that for the majority of hypothetical exposures were extremely low. In some instances, estimates showed higher exposure. In those instances where EPA calculated higher exposures, further evaluation of the assumptions showed that the estimated exposures overestimated the actual expected exposures.

Detailed descriptions of the hypothetical exposures and their findings are included in the support document entitled "Revised Exposure Assessment for Incidentally Produced Polychlorinated Biphenyls." This support document contains revisions made in response to the comments on the earlier draft exposure assessment. Examples of situations with the highest exposures, and EPA's findings concerning them are given below.

In occupational settings, dermal exposure was estimated assuming immediate and total absorption. Inhalation and dermal exposure situations assumed that workers were exposed to PCBs for 38.5 years. All of these hypothetical exposures assumed that workers do not wear protective clothing.

EPA estimated the exposure from ingestion of fish and water obtained from streams which receive industrial wastewater discharge containing 100 micrograms of PCBs per liter of wastewater ( $\mu\text{g/l}$ ). This is the LOQ for non-Aroclor PCBs. In this hypothetical exposure situation, the concentrations of PCBs in the drinking water and fish depend entirely on how much the PCB concentration is diluted by the receiving stream. Streams with low flow rates will have the highest concentrations of PCBs. If all of the fish and water in an individual's diet is obtained from a stream with a flow rate in the lower 50 percentile of streams receiving discharges from the chemical and plastics industries, exposure could be high.

EPA has determined that it could not practically measure non-Aroclor PCBs below 100  $\mu\text{g/l}$ . Therefore, there is no measurable reduction in exposure. For recycled Aroclor PCBs, because they can be measured at a lower level, EPA has reduced the discharge limit to 3  $\mu\text{g/l}$ , thereby reducing the exposure considerably. These discharge limits may be further reduced by more stringent regulations issued under EPA authorities, or any permits or pretreatment requirements issued by a state or local government.

EPA developed two hypothetical exposure situations to estimate maximum exposure resulting from the use of detergent bars. In both of these hypothetical exposures, EPA assumes that PCBs are present in the surfactant component of the detergent bars at 25 ppm. Comments submitted to the Agency in response to the proposed rule showed that some detergent bars may contain PCBs, although the levels are very low. If PCBs are not present in the components of detergent bars, then there will be no exposure to PCBs from these products.

The first hypothetical exposure assumes that all of the PCBs present in detergent bars are dermally absorbed. In actual use, most of the PCBs will be rinsed off before absorption. Thus, the estimated exposure overestimates the actual exposure. In a second hypothetical exposure, EPA assumes that only a detergent bar film is absorbed. Unlike all of the other hypothetical exposures that estimate dermal absorption of PCBs, this hypothetical exposure situation assumes that the absorption of PCBs is spread out over time and not instantaneous. The second hypothetical exposure is EPA's best estimate of maximum exposure to PCBs in detergent bars.

It is impossible to determine precisely whether the exposure estimated using the assumptions made in this second hypothetical exposure situation equal or exceed actual exposures. Since virtually all consumers come into contact with detergent bars which may contain PCBs on a daily basis, measures must be taken to minimize consumer exposure to PCBs in detergent bars. Therefore, EPA has set a 5 ppm concentration limit in the components of detergent bars. The surfactant is the component that is likely to contain PCBs; thus, PCB concentrations in the final detergent bar product will actually be well below 5 ppm.

EPA evaluated the exposure to PCBs from use of skin lotions and creams assuming that PCBs are present in the surfactant component of the skin lotions and creams at 25 ppm. This exposure assessment assumes daily usage, 100 percent immediate absorption, and generous application of the skin lotions and creams. Therefore, EPA believes that these exposure estimates overstate the actual exposures from skin lotions and creams. In fact, PCBs are only hypothesized to occur in skin lotions and creams. If PCBs do not occur in these products, there is no risk from PCB exposure in skin lotions and creams.

FDA is the Federal agency that regulates skin lotions and creams. EPA

has provided this information to the FDA for appropriate action.

*c. Magnitude of human exposure.* As CMA, EDF, and NRDC pointed out in the consensus proposal, the estimated total annual production of inadvertently generated PCBs approximates 100,000 pounds. This poundage is but a small percentage (1.0 percent) of the 10,000,000 pounds of Aroclor PCBs that the consensus proposal estimates to have entered the environment annually before PCB controls were instituted and less than 0.1% of the 150,000,000 pounds estimated to currently exist free in the environment.

In addition, the consensus proposal states that fewer than 11,000 pounds of inadvertently generated PCBs were estimated to enter products annually. Further, many products that contain inadvertently generated PCBs are chemical intermediates. In the consumer end-use products, the PCBs would in many instances be bound in tight matrices. CMA, EDF, and NRDC estimate that fewer than 1,000 pounds annually are likely to enter the environment. Based on these facts, EPA agrees with the consensus proposal that releases of inadvertently generated PCBs are unlikely to have a measurable effect on the public health or the environment. Also, as noted above, exposures from the non-Aroclor and recycled PCBs are estimated to be low.

*d. Quantitative risk assessments.* At the time of the proposed rule, EPA had prepared quantitative carcinogenicity and reproductive/developmental risk assessments. The Agency has reviewed the range of quantitative risks and determined that the risks presented by the activities excluded in this rulemaking are not unreasonable. Therefore, after evaluating all of the information, EPA has concluded that the qualitative evaluation of health and environmental effects suggested in the consensus proposal is a reasonable approach to risk assessment.

In support of the proposed rule, EPA also developed a reproductive/developmental effects risk assessment for PCBs entitled "Quantitative Risk Assessment of Reproductive Risk Associated with PCB Exposure." This assessment included quantitative risk models without threshold levels, as well as a more traditional "No Observable Effects Level" (NOEL) approach to risk assessment. The Agency specifically requested comments on this preliminary reproductive/developmental effects risk assessment in the proposed rule.

The comments received identified two areas of concern for the Agency: (1) These were scientific and policy issues

dealing with quantitative risk assessment for reproductive/developmental effects risk assessments in general, and (2) those associated with PCBs in particular. After evaluating these comments, EPA has decided that additional time is needed to resolve the scientific and policy issues surrounding quantitative risk assessment for reproductive/developmental effects. Therefore, EPA is not using this risk assessment to support this rulemaking.

## 2. Effects on the Environment

In previous PCB rulemaking, EPA concluded that PCBs can be concentrated in freshwater and marine organisms. The transfer of PCBs up the food chain from phytoplankton to invertebrates, fish, and mammals can result ultimately in human exposure through consumption of PCB-containing food sources. Available data show that PCBs affect the productivity of phytoplankton communities; cause deleterious effects on environmentally important freshwater invertebrates; and impair reproductive success in birds and mammals.

PCBs also are toxic to fish at very low exposure levels. The survival rate and the reproductive success of fish can be adversely affected in the presence of PCBs. Various sublethal physiological effects attributed to PCBs have been recorded in the literature. Abnormalities in bone development and reproductive organs also have been demonstrated.

EPA conducted a quantitative environmental risk assessment of PCBs for this rulemaking, including a review of available environmental data. This assessment can be found in the support document entitled "Environmental Risk and Hazard Assessments of Polychlorinated Biphenyls." EPA concluded that ambient concentrations and food chain transport of PCBs may impair the reproductive potential of commercially valuable fish and certain wild mammals. PCB residues are strongly correlated with reductions in natural populations of marine mammals and may be correlated with declines in river otter populations. High PCB residues have been found in various birds, especially gulls and carnivorous birds, but no resulting effects have been demonstrated.

In addition, EPA estimated the toxicity for the monochlorinated through hexachlorinated biphenyls and for decachlorinated biphenyl. These estimates show that as the number of chlorine atoms on the biphenyl molecule increases, the no observable effect concentration (NOEC) for fish decreases. These estimates were

partially based upon data obtained using the most sensitive fish species.

According to the consensus proposal, the total annual production of inadvertently generated PCBs approximates 100,000 pounds, most of which are never released to the environment. CMA, EDF, and NRDC estimate that fewer than 1,000 pounds annually are likely to enter the environment. This annual production is only 0.01 percent of the 10 million pounds of Aroclor PCBs that are estimated to have entered the environment annually before PCB controls were instituted. This production is only 0.0007 percent of the total 180 million pounds of Aroclor PCBs estimated to have entered the environment prior to institution of PCB controls. In addition, the consensus proposal states that various monitoring studies have documented the declining load of PCBs in the environment. Based on these facts, EPA agrees with the conclusion stated in the consensus proposal that releases of PCBs from inadvertent generation, even at a level of 10,000 pounds of PCBs released annually, would have no measurable effect on the declining environmental load.

EPA is setting the non-Aroclor PCB concentration limit for water discharges below 0.1 ppm, the LOQ for these PCBs. This is the level below which non-Aroclor PCBs cannot practically and reliably be measured. Setting the concentration limit for PCBs below this level will in effect be equivalent to a total ban on PCBs in water discharges. Likewise, the Agency is setting the PCB concentration limit for water discharges from processes that are recycling PCBs below 3 ppb, the LOQ for Aroclor PCBs. This limit for Aroclor PCBs in water discharges is the result of several comments submitted on the proposed Uncontrolled PCBs Rule.

### 3. Discounting Factors for Monochlorinated and Dichlorinated Biphenyls

The consensus proposal provided discounting factors for monochlorinated biphenyls and dichlorinated biphenyls of 50 and 5, respectively. As stated in the consensus proposal, despite the manufacture in the United States of approximately 10 million pounds of monochlorinated biphenyls and more than 100 million pounds of dichlorinated biphenyls (as part of commercial PCB mixtures) from 1930 to 1978, no monochlorinated biphenyls and, if any, dichlorinated biphenyls have been detected in humans or the environment. The consensus proposal attributes these monitoring results to several factors that

distinguish between monochlorinated and dichlorinated biphenyls and the higher chlorinated biphenyls.

In contrast to the more highly chlorinated biphenyls, the monochlorinated and dichlorinated biphenyls are: (1) Less likely to adsorb to solids; (2) more likely to dissolve in water; (3) more likely to move from natural bodies of water to air; (4) more likely to biodegrade; and (5) less likely to bioaccumulate. Thus, CMA, EDF, and NRDC concluded that monochlorinated and dichlorinated biphenyls are less persistent in the environment and less likely to magnify or accumulate than the more highly chlorinated biphenyls.

In support of these discounting factors, CMA, EDF, and NRDC considered data by Moolenaar (1982) as well as information provided by Dow Chemical Company in a May 13, 1982 citizen's petition to amend 40 CFR Part 761. In general, this information demonstrates that monochlorinated and dichlorinated biphenyls are less persistent than more highly chlorinated biphenyls. The information included environmental variables such as environmental persistence, residence time in water, and fish bioconcentration. Adipose and plasma levels in capacitor workers and levels in human milk samples were also considered. A chart is presented in the consensus proposal that compares persistence data for monochlorinated and dichlorinated biphenyls with persistence data for trichlorinated biphenyls, demonstrating that monochlorinated and dichlorinated biphenyls are less persistent than trichlorinated biphenyls.

These discounting factors encompass all activities involving inadvertently generated monochlorinated and dichlorinated PCBs, but do not apply to any other PCBs subject to EPA regulation. This position is consistent with previous EPA PCB regulatory policy. The Agency has a long history, in regulations under both the Clean Water Act and TSCA, of covering the lesser chlorinated PCBs in the same manner as the higher chlorinated PCBs. The decision to affect this policy under Clean Water Act regulations was upheld by the United States Court of Appeals of the District of Columbia Circuit in *EDF v. EPA*, 598 F.2d 62 (1978). EPA has continued this policy under TSCA regulations. The definition of PCBs under 40 CFR 761.3 states that PCBs consist of any chemical substance "that is limited to the biphenyl molecule that has been chlorinated to varying degrees."

Today's rule is making a small exception to this long-standing policy.

While EPA is continuing to regulate the lesser chlorinated PCBs for all intentionally generated PCBs, the Agency has determined that discounting inadvertently generated monochlorinated and dichlorinated biphenyls will not present an unreasonable risk. EPA has arrived at this decision based on the very small amounts of monochlorinated and dichlorinated biphenyls that will be generated and released as a result of this rule, the fact that these PCB homologs are generally less persistent and less likely to bioaccumulate than the higher chlorinated PCB homologs and the high cost of preventing the generation of the monochlorinated and dichlorinated biphenyls in manufacturing processes. Accordingly, EPA has determined that the incremental risk reduction that would result from more stringent regulation of the monochlorinated and dichlorinated biphenyls in the limited circumstances of this regulation is outweighed by the costs that would be incurred.

To illustrate how these discounting factors would work, assume a product is analyzed and found to have a PCB concentration of 510 ppm PCBs. After further analysis it is determined that the product contains 10 ppm of decachlorinated biphenyl and 500 ppm of monochlorinated biphenyl. Since the discounting factor for monochlorinated biphenyl is 50, this product, for purposes of this regulation, contains only 10 ppm of monochlorinated biphenyl (500 ppm monochlorinated biphenyl ÷ 50 discounting factor = 10 ppm PCBs). This product would be found in compliance since, for purposes of this regulation, it would be considered to contain only 20 ppm PCBs (10 ppm attributed to monochlorinated biphenyl and 10 ppm attributed to decachlorinated biphenyl). Although the PCB limits for detergent bars are lower, calculation of total PCBs in the components of detergent bars would be discounted similarly.

### G. Regulatory Impact Analysis, Benefits, and Availability of Substitutes

#### 1. Benefits of PCBs and Availability of Substitutes

CMA has stated that any chemical process involving carbon, chlorine, and elevated temperatures is likely to inadvertently generate some PCBs. Chlorine and carbon are two of the most abundant elements on Earth. Thus, both are present in many chemical processes. In fact, as mentioned in Unit II.C of this preamble, EPA originally developed a list of approximately 200 chemical processes with a potential to

inadvertently generate PCBs. These 200 chemical processes are of major importance to the organic chemical industry. For example, many of these processes produce high volume chlorinated solvents.

A wide variety of other products are known or believed to contain inadvertently generated PCBs. Among these products are paints, printing inks, agricultural chemicals, plastic materials, and detergent bars. These products are widespread and products, such as detergent bars and paint, are considered essential, non-luxury items in our society. Thus, many of the products that contain inadvertently generated PCBs have great societal value.

Industry commented in response to the Closed and Controlled Waste Manufacturing Processes Rule that, in general, cost-competitive substitutes are not available for products contaminated with low level PCBs. In general, industry has not been successful in modifying processes to prevent the incidental formation of any PCBs. Furthermore, CMA has commented that research programs to study ways of reducing incidental PCB formation are very costly and have met with limited success.

EPA estimated the cost of controlling the level of inadvertently generated PCBs, considering that if exclusions were not provided by this rule, these processes would be banned. Estimates of the benefit to producers of a 25 ppm cutoff range from approximately \$77 million to \$451 million if plants continue operations for 10 years. The estimated benefits to producers, distributors, and commercial users who remain in business for 10 years range from \$950 million to \$5.50 billion.

EPA believes that most of the chemical processes with unknown PCB concentrations that are analyzed in the RIA are produced in low volumes. In addition, a number of interested parties commented that PCBs have not been detected in products whose manufacture was suspected to involve inadvertent generation of PCBs. Based on this information, EPA believes that the majority of products are already below the 25 ppm limit (5 ppm for detergent bars).

## 2. Economic Consequences

EPA evaluated several options for dealing with the uncontrolled PCBs. One of these options was to allow the total ban of section 8(e) to take effect. EPA also had the option to set permissible levels of PCBs either higher or lower than the levels set in this rule.

Had EPA allowed the ban to become effective, companies could: (1) Modify the processes that inadvertently

generate PCBs so that they would not generate PCBs, (2) substitute PCB-containing products with non-PCB-containing products, or (3) apply for annual exemptions under section 8(e)(3)(B) of TSCA. Industry has commented that substituting products or substituting processes to eliminate inadvertently generated PCBs is not generally feasible. Thus, the selection of this regulatory option could result in a major disruption in commerce.

The Regulatory Impact Analysis (RIA) prepared for this rulemaking estimates that if no exclusion were provided by this rule, the total costs of the exemption petition process for producers, distributors, and commercial users over the next 10 years would range from \$950 million to \$5.6 billion. These costs are extremely high and would present a significant economic burden to industry while the amount of PCBs eliminated by such regulation would be small. However, EPA believes that in the majority of cases PCB concentration levels are currently below the levels excluded by this rule.

If EPA set the PCB concentration limits at a higher level, the result will be much lower costs. However, higher PCB concentration limits would result in significantly higher risks of injury to health and the environment. Conversely, if EPA set the PCB concentration limits at a lower level, the result would be lower risks of injury to health and the environment. The costs associated with lowering these concentration limits, however, would be much greater, approaching the total costs estimated for the exemption petition process.

The only identifiable costs of this rule with respect to uncontrolled PCBs result from the certification, recordkeeping, and reporting requirements. These costs were estimated in the RIA to range from \$10 million to \$50 million over a 10-year period. Thus, this rule presents very low costs in comparison with more restrictive approaches.

EPA estimates that this rule will not result in a disruption of commerce. A disruption of commerce is likely if the total ban or more restrictive concentration limit options were chosen. EPA also believes that this rule will not stifle new technology. EPA estimates that the discounting factors for monochlorinated and dichlorinated biphenyls are likely to save industry \$800 thousand to \$4.7 million each year based on the avoidance of exemption costs.

EPA analyzed the distribution of benefits of this rule across companies of various sizes and employment. According to the RIA, many small businesses will benefit from the

exclusions provided by this rule in avoiding the expense associated with filing annual exemption petitions. Thus, the Agency concludes that small businesses generating inadvertent PCBs will benefit from the provisions of this rule.

With respect to technological innovation, it is reasonable to assume that at least some portion of the money that industry will save by not being subjected to a total PCB ban will go to research and development activities. No negative comments were made on the RIA completed for the proposed Uncontrolled PCBs Rule. Therefore, no major changes have been made in the final RIA. For further details, see the support document "Regulatory Impact Analysis of the Final Rule Regulating Inadvertent PCB Generation from Uncontrolled Sources."

## H. Unreasonable Risk Determination

EPA concludes that the risks associated with the manufacture, processing, distribution in commerce and use of those inadvertently generated and recycled PCBs excluded from the prohibitions of section 8(e) of TSCA by this rule are outweighed by the costs that would be incurred if these PCBs were to be banned. The high costs of eliminating the low risks that might be attributed to the inadvertent generation of low level concentrations of PCBs would place an unwarranted burden on society, with only a minimal reduction in public health risks. Therefore, EPA concludes that the exclusions provided for in this rule do not present an unreasonable risk of injury to health or the environment. The following facts support this conclusion.

1. Although the number of processes that inadvertently generated PCBs may be large, the total quantity of such PCBs is estimated to be less than 100,000 pounds per year. Of this estimated total, only 1,000 pounds are expected to enter the environment yearly. In contrast, it is estimated that 10 million pounds entered the environment annually before PCB controls were instituted. It is also estimated that there are currently 150,000,000 pounds of PCBs that are currently present in the environment as free PCBs.

2. This rule will save society the enormous costs of instituting a ban on low level concentrations of inadvertently generated PCBs. The rule does impose recordkeeping and reporting burdens; however, the larger burdens imposed on industry by the prohibitions of section 8(e)(3), in particular the annual exemption process with its uncertainties, are avoided

1. Monochlorinated and dichlorinated biphenyls are not as persistent in the environment as other PCBs. A measure of persistence in humans is the level of a substance found in adipose tissue; monochlorinated and dichlorinated biphenyls have not been found in adipose tissue. Further, EPA estimates that these discounting factors are likely to save industry \$800 thousand to \$4.7 million yearly. Therefore, the discounting factors established in this rule will not present unreasonable risks to human health or the environment.

4. EPA determined that none of the realistic hypothetical exposures were significant, especially when compared to the 150,000,000 pounds of PCBs already existing in the environment. When those hypothetical situations showing a high exposure were reviewed, EPA found that these hypothetical exposures overstate the actually expected exposures. Therefore, EPA concludes that the risks associated with these exposure situations are not unreasonable.

EPA is setting a lower, more protective concentration limit of 5 ppm PCBs in the components of detergent bars based on the high exposure potential of these products. This limit is more protective of consumers who are often unaware of potential hazards from exposure to chemicals in consumer use products.

5. EPA has also determined that exposure to recycled PCBs at the levels excluded by this rule are of minimal significance; therefore, the risks associated with these exposures are not unreasonable.

6. The recordkeeping and reporting requirements set in this rule provide EPA with a means of accounting for major releases of inadvertent PCBs, and for reassessing the findings in this rule, if necessary.

7. In general, substitutes are not reasonably available for products contaminated with low level PCBs and the processes that generate these PCBs cannot be cost-effectively modified to prevent the formation of any PCBs.

8. Small companies would benefit from this rule and the rule could provide some impetus to technological innovation in the chemical industry.

#### 1. Disposal Requirements

In the May 1979 PCB Ban Rule, EPA concluded generally that PCBs at levels of 50 ppm or greater must be disposed of in accordance with the requirements of 40 CFR Part 761. The 50 ppm cutoff was a practical level which would allow EPA to reasonably administer TSCA and attain the objectives of section 8(e) of TSCA (44 FR 31518). Today's rule does

not deal with the regulatory cutoff for disposal of PCBs established in the PCB Ban Rule except for authorizing discounting factors for inadvertently generated monochlorinated and dichlorinated biphenyls. The discounting factors do not apply to any other PCBs regulated under TSCA.

Suggestion has been made that EPA take regulatory action to resolve issues relating to disposal regulations. Concern has been expressed with the 50 ppm cutoff for PCB disposal, including the fact that waste oil containing less than 50 ppm PCBs may be burned as fuel. EPA notes that, while legitimate concerns may be raised about the disposal regulations, this proceeding is not the proper forum to deal with those issues. In this proceeding, EPA is dealing only with issues arising from the *EDF v. EPA* lawsuit. These issues did not relate to the disposal regulations.

#### J. Recordkeeping, Certification, and Reporting

The consensus proposal would have required manufacturers to meet certain recordkeeping, certification, and reporting requirements. In the proposed rule, EPA adopted these requirements with minor modifications. Today's rule adopts the requirements proposed in the December 8, 1983, Federal Register notice.

Today's rule requires manufacturers who intend to take advantage of this exclusion, to notify EPA of products leaving the manufacturing site or imported products that contain greater than 2 micrograms of PCBs per gram of product ( $\mu\text{g/g}$ ) for any resolvable gas chromatographic peak (roughly 2 ppm). These reports must include the number, type, and location of excluded manufacturing processes. In addition, these reports must include a certification, signed by an appropriate corporate official, that: (1) The manufacturer is in compliance with all requirements of the regulation, including requirements for products, air, and water releases, and process waste disposal; (2) the determination of compliance is based on actual monitoring or on a theoretical assessment; and (3) monitoring data or the theoretical assessment is maintained. EPA intends to use the information required under this rule in developing an enforcement strategy and compliance monitoring program. These reports must be filed with EPA by October 1, 1984 or within 90 days of starting up a process or commencing importation of PCBs. These reports must be repeated whenever chemical process conditions are significantly modified to make the previous reports invalid.

Manufacturers who wish to take advantage of the exclusion must also report to the Agency if they are releasing more than 10 pounds of PCBs to air or water annually. Furthermore, manufacturers must report the total quantity of PCBs in products leaving the site of an excluded manufacturing process in any calendar year when the total production quantity exceeds 0.0025 percent of that site's rated capacity for such manufacturing processes. Importers must report to EPA whenever the quantity of PCBs imported in any calendar year exceeds 0.0025 percent of the average total quantity of product containing PCBs imported by the importer between 1978 and 1982.

Reports of theoretical analyses or actual monitoring must be kept for seven years or three years after the process ceases, whichever is shorter. Reports of theoretical assessments must include a description of the reactions generating PCBs, levels generated, and levels released. The basis for these estimates, as well as the names and qualifications of personnel preparing the assessment, must be included in the report. Monitoring reports must include the data, the method of analysis, quality assurance plan, name of analysts, the date and time of the analysis, the identification of the sample matrix, and the lot numbers for the sample.

A report to EPA will not be required for those PCBs in air, waste, and products below to LOQ, as established under the Closed and Controlled Waste Processes Manufacturing Rule. Generally, a report will not be required for those PCBs in water below the LOQ. However, under certain conditions PCBs could be released at concentration levels below the practical LOQ, but still result in elevated levels of total PCBs. This would occur if the discharges containing the low level PCBs are released at very high volumes. In light of the fact, theoretical assessments that predict a plant will release more than 10 pounds of PCBs annually in the water discharges must be submitted to EPA, even if PCBs are not quantitated in the discharges during monitoring.

Since CMA, EDF, and NRDC jointly recommended the basic recordkeeping, certification, and reporting requirements in this rule, EPA believes that these reporting requirements do not present an unreasonable burden on the regulated industry. The recordkeeping, certification, and reporting requirements have been incorporated in §§ 761.185, 761.187, and 761.188 of this rule.

Substances that are covered by this rule and are exported or imported are also subject to the exporting and

importing requirements of TSCA sections 12(b) and 13. EPA regulations interpreting section 12(b) requirements appear at 40 CFR Part 707. Imported products are covered by TSCA section 13 certification requirements at 19 CFR 12.118 through 12.127 and 127.8 (amended), (48 FR 34734, August 1, 1983). EPA's policy in support of these requirements appears at 40 CFR Part 707 (48 FR 55462, December 13, 1983).

#### K. Quantitation of PCB Concentration Levels

##### 1. Analytical Chemistry Methodology

The consensus proposal recommends that the analytical chemistry methods developed for the Closed and Controlled Waste Manufacturing Processes Rule be used in determining the non-Aroclor PCB concentration level in particular media. EPA agrees with CMA, EDF, and NRDC that the analytical chemistry methodology developed for the Closed and Controlled Waste Manufacturing Processes Rule is appropriate under this rule. Thus, the PCB analytical chemistry methodology that will be used for non-Aroclor PCBs in determining compliance with today's rule will be the Closed and Controlled Waste Manufacturing Processes Rule guidance that was set forth in the document entitled "Analytical Methods for By-Product PCBs—Preliminary Validation and Interim Methods."

The analytical chemistry guidance document presents methods for chemically analyzing inadvertently generated PCBs in commercial products, product waste streams, water dischargers, and air. These analytical chemistry methods are based on a determination of quantities of PCBs using capillary gas chromatography/electron impact mass spectrometry (CGC/EIMS). This analytical chemistry methodology for commercial products and product waste streams relies heavily on a strong quality assurance program.

Several comments on the use of different, more Aroclor-sensitive analytical chemistry methods in water were submitted in response to the proposed Uncontrolled PCBs Rule. EPA recognizes that there is a specific analytical chemistry methodology to determine Aroclor PCB concentrations in water. This analytical chemistry methodology is a test method published by the EPA for Organochlorine Pesticides and PCBs, referred to as Method 808. This method uses gas chromatography/electron capture (GC/EC) to analyze for Aroclor PCBs while the method for non-Aroclor PCBs uses CGC/EIMS.

GC/EC is the more sensitive method. It establishes chemists to measure at very low levels specific quantities of a limited number of PCB compounds with a highly recognizable pattern (Aroclor PCBs). On the other hand, CGC/EIMS is a more specific method. Using CGC/EIMS, a chemist can confirm the actual presence of a great number of different PCB compounds, but cannot specify quantities at the very low concentrations possible by using Method 808. Since Aroclor PCBs have more easily recognizable patterns than non-Aroclor PCBs, the issue of specificity is not as crucial as with non-Aroclor PCBs. Therefore, the Agency believes that it is appropriate to utilize GC/EC in the chemical analysis of Aroclor PCBs.

##### 2. Sampling Scheme

EPA has developed a sampling technique for non-Aroclor PCBs that will be used by the Agency when it monitors for compliance during an enforcement inspection. This sequential sampling protocol bases the decision to take a further sample of the results on previous analyses. The advantage of sequential sampling is that early results will, in some cases, provide adequate evidence for a decision of compliance or noncompliance, and the expense of further testing can be avoided. Under this sampling protocol, only a few chemical analyses would be required to confirm non-Aroclor PCB levels in product, air, and water samples which are strongly compliant (very low PCB levels) or strongly noncompliant (very high PCB levels). Given this protocol, no more than seven samples would need to be analyzed.

This sampling scheme has been developed for non-Aroclor PCBs and will not be used for sampling Aroclor PCBs. Further information about the sequential sampling protocol is included in the support document entitled "Guidance Document on Sampling and Sample Selection for Uncontrolled PCBs."

##### 3. Establishing a Baseline for Measurement of PCBs

The lowest concentration of a substance that an analytical process can detect is referred to as the limit of detection (LOD). The lowest concentration of a substance that an analytical process can quantify with a known level of precision and which can be reproduced in repeated analyses is referred to as the limit of quantitation (LOQ). Thus, the baseline level for quantifying the total PCB concentration could be established at the LOD, the

LOQ, or at an arbitrary level between these values.

In the Closed and Controlled Waste Manufacturing Processes Rule, EPA selected the LOQ in establishing the numerical cutoffs instead of the LOD. At that time, EPA concluded that it may be impossible to confirm the identity of non-Aroclor PCBs at the LOD. EPA concluded that a PCB concentration at or near the LOQ is needed to confirm the identity of the chlorinated biphenyls for compliance monitoring purposes (47 FR 46984). EPA reaffirms these conclusions reached in the Closed and Controlled Waste Manufacturing Processes Rule. Therefore, EPA is establishing the baseline for quantitating PCBs at the LOQ.

EPA has considered the appropriate baseline to use for measuring Aroclor PCBs. The Agency has decided that for purposes of this regulation, the appropriate baseline for measuring Aroclor PCBs is also the LOQ, rather than the LOD.

In light of the need to select a single LOQ level which can be widely achieved, even in difficult matrices, these data lead EPA to conclude that a practical LOQ for all wastewaters is 3 µg/L. This level is reasonably within the range of levels demonstrated in interlaboratory validations on different kinds of wastewaters, and, in fact, allows for some increase in the method LOQ for less efficiently removed interferences. EPA also notes that, on a case-by-case basis, it will often be possible to achieve far lower LOQs for specific wastewaters. Such determinations would, however, be more appropriate for specific wastewaters and permit authorities than for this general PCB rule. For further information concerning this LOQ, refer to the support document "Practical Limit of Quantitation of EPA Method 808 for Use in Aroclor Analysis of All Wastewaters" (memo from J. Smith to S. Sterling).

#### III. Notice of Deferral of Action on PCB Exemption Petitions

In the Federal Register of November 1, 1983 (48 FR 50486), EPA proposed to grant 40 exemption petitions, deny 73 exemption petitions, and defer action on 50 exemption petitions that had been previously submitted to the Agency. The exemption petitions on which EPA proposed to defer action are to manufacture, process, or distribute in commerce substances or mixtures inadvertently contaminated with 50 ppm or greater PCBs.

EPA was aware that the ongoing PCB rulemaking described in Unit II of this

preamble would affect the disposition of certain exemption petitions. Some of the petitioners are engaged in activities that, because of the discounting for monochlorinated and dichlorinated biphenyls, involve concentrations of PCBs at levels below the new limits and, therefore, will no longer require exemptions. Other petitioners are engaged in activities that involve concentrations of PCBs at levels above the new limits and, therefore, will still require exemptions to continue their activities.

In the December 8, 1983 Federal Register notice on uncontrolled PCBs (48 FR 55076), EPA gave notice that it intended to defer action on 50 exemption petitions that may be affected by the Uncontrolled PCBs Rule. No comments were received on the proposed deferral of action for certain exemption petitions that may be affected by the Uncontrolled PCBs Rule. The Agency is hereby giving notice that it has deferred action on these exemption petitions.

After proposing the Uncontrolled PCBs Rule, EPA discovered that one of the petitions listed in the proposed rule did not deal with inadvertently generated PCBs. Since the disposition of that petition would not be affected by the exclusion for inadvertently generated and recycled PCBs, EPA has not included the petition (Honeywell, Inc., ME-51) in the listing of those petitions on which EPA is deferring action. Therefore, in today's notice, the Agency is deferring action on 49 exemption petitions.

Elsewhere in today's Federal Register, EPA is requesting additional comments on the 49 exemption petitions that would be affected by the Uncontrolled PCBs Rule. The 49 petitioners whose exemption petitions are affected by the Uncontrolled PCBs Rule are listed in that notice. As stated in that notice, the 49 petitioners must evaluate the Uncontrolled PCBs Rule and decide whether they still need exemptions to continue their activities.

If a petitioner still needs an exemption, it must submit written comments renewing its exemption petition to continue the activity. These comments must be submitted no later than October 1, 1984. If an exemption petition is renewed, EPA will allow the petitioner to continue the activity for which it requests exemption until EPA has acted to grant or deny the exemption. If the exemption petition is not renewed, EPA will deny the exemption petition.

#### IV. Amendment to the 1979 Use Authorizations for PCBs in Hydraulic and Heat Transfer Fluid

##### A. Background

PCBs were manufactured for use in hydraulic and heat transfer systems in a variety of industries until 1972. The aluminum, copper, iron and steel forming industries used hydraulic systems with commercial Aroclor PCB fluid. PCBs in heat transfer systems were used in the inorganic chemical, organic chemical, plastics and synthetics, and petroleum refining industries. High PCB levels apparently remained in some systems until at least 1979. In addition, some unknown quantity of unused PCB fluids was probably kept by facilities after production ceased in 1972 and used for topping-off hydraulic and heat transfer systems.

Under section 6(e)(2) of TSCA, EPA may authorize the use of PCBs if the Agency finds that the use will not present an unreasonable risk of injury to health or the environment. In the PCB Ban Rule, EPA determined that the continued use of PCBs in hydraulic systems and heat transfer systems under certain conditions did not present an unreasonable risk. Therefore, in 1979, EPA authorized the non-totally enclosed use of PCBs at concentrations of 50 ppm or greater in hydraulic systems and in heat transfer systems (40 CFR 761.30 (d) and (e)). These use authorizations expire on July 1, 1984. In promulgating these use authorizations, EPA assumed that the conditions of those authorizations, which required retrofitting with non-PCB fluids, would reduce the PCB concentration levels in those systems to below 50 ppm by July 1, 1984.

With the overturning of the 50 ppm regulatory cutoff as a consequence of *EDF v. EPA*, the status of heat transfer systems and hydraulic systems with less than 50 ppm PCBs will be placed in doubt after July 1, 1984. EPA is clarifying the status of these systems in today's rule by authorizing the use of PCBs in these systems at concentrations of less than 50 ppm for their remaining useful lives. Systems with more than 50 ppm PCBs are unlawful after July 1, 1984. Under this rule, hydraulic and heat transfer systems cannot be filled (i.e., "topped off") with fluids containing 50 ppm or greater of PCBs. In addition, EPA is requiring that workers wear protective gloves under circumstances which would most likely lead to dermal exposure.

To determine whether a risk from PCB use is unreasonable, EPA balances the probability that harm will occur from the use against the benefits to society of

the authorized use. In determining whether these uses of PCBs at concentrations of less than 50 ppm presented unreasonable risks, EPA considered the effects of PCBs on health and the environment, including the magnitude of PCB exposure to humans and the environment; the benefits of using PCBs; the availability of substitutes for PCB uses; and the economic impact resulting from the rule's effect upon the national economy, small business, technological innovation, the environment, and human health. EPA proposed that the use of PCBs at levels of less than 50 ppm be continued for heat transfer and hydraulic systems.

EPA has determined that the use of PCBs in hydraulic and heat transfer fluid at concentrations of less than 50 ppm under certain circumstances does not present an unreasonable risk of injury to human health or the environment. Therefore, EPA is amending the PCB Ban Rule to authorize for the remaining useful lives of these systems the use of PCBs in hydraulic and heat transfer fluid at concentrations of less than 50 ppm provided that workers wear protective gloves whenever performing certain high exposure tasks.

##### B. Human Health and Environmental Risks

In determining whether to amend § 761.30 (d) and (e), EPA generated exposure and risk assessments for these uses of PCBs. A review of the general methodology for exposure and risk assessments, and a general analysis of the health and environmental effects of PCBs, are included under Unit II of this preamble. Information related specifically to the use of PCB fluids in hydraulic and heat transfer systems is described below. Further details concerning the exposure assessment for these uses are included in Volume IV of the support document entitled "Exposure Assessment for Incidentally Produced Polychlorinated Biphenyls."

Two categories of factors are particularly important to the evaluation of risk for these uses of PCBs: (1) The estimated contamination level, number, and size of PCB-contaminated hydraulic and heat transfer systems at the expiration deadline for these uses of PCBs under the PCB Ban Rule; and (2) the estimated number of workers potentially exposed to PCBs from contaminated systems during a period of exposure assumed to be 38.5 years. EPA inspection data were primarily used for developing estimates for these key factors.

Worker exposure to leaked PCBs from heat transfer and hydraulic systems may occur through both inhalation and dermal absorption during machine operation and during maintenance and repair operations. EPA has estimated the maximum inhalation exposure to PCBs that volatilize from the leaked hydraulic or heat transfer fluid. The exposure assessment of PCB fluid that has volatilized from these systems includes considerations of evaporation rates, emission rates, "downwind" concentrations, and annual inhalation. These annual inhalation estimates have been developed for worker exposure during 40 hours per week and 48 weeks per year.

Occupational dermal exposure from these uses of PCBs has been calculated from several variables. These variables include annual PCB dermal exposure, the duration of exposure, the frequency of exposure, the PCB exposure level, the skin area exposed, the absorption rate of PCBs through the skin, liquid thickness on skin, the density of liquid, and the PCB concentration in the liquid.

Using these exposure calculations for machine operations, and maintenance and repair workers, EPA determined that the carcinogenic risk from the long-term dermal and inhalation exposure to PCBs in hydraulic and heat transfer systems is very low. However, the hypothetical dermal absorption situations may have a higher risk because of higher exposures. In evaluating the risks from exposure to PCBs in hydraulic and heat transfer systems, EPA assumed a constant 50 ppm exposure each workday for a period of 38.5 years. These assumptions represent a worst-case; therefore, the estimated exposures are probably overstated.

EPA believes that it is necessary to protect workers from the higher dermal exposures presented in this assessment. EPA believes that the highest occupational dermal exposures result from actual maintenance of the heat transfer and hydraulic systems. To mitigate these exposures, EPA has added a requirement to this use authorization that workers are provided with and wear protective gloves whenever performing certain high exposure tasks. EPA has reviewed information on protective materials. Based on PCB break-through times for different materials, EPA has determined that viton elastomer is the only material that will adequately protect workers.

These use authorizations for heat transfer and hydraulic systems require owners to provide and workers to wear viton elastomer gloves whenever doing work on these systems that present a

high potential exposure to PCBs. EPA believes that maintenance work on these systems presents a high potential exposure.

### C. Regulatory Impact Analysis

EPA has developed a regulatory impact analysis for the reauthorization of these uses of PCBs. In this analysis EPA has evaluated the various regulatory options by comparing the total and incremental costs for achieving different PCB concentration levels with the total and incremental pounds of PCBs removed in order to comply with each concentration level. Cost estimates were determined for average hydraulic and heat transfer systems attaining compliance with the various draining, fluid replacement, testing, and disposal requirements in the current PCB regulations in § 761.30 (d) and (e) at each concentration level. In addition, EPA has prepared cost estimates for requiring the use of protective gloves.

In its Regulatory Impact Analysis (RIA), EPA considered three regulatory options: (1) Reauthorizing the use of PCBs in these systems at a 25 ppm concentration level; (2) reauthorizing the use of PCBs in these systems at PCB levels greater than 50 ppm; and (3) reauthorizing the use of PCBs in these systems at a 50 ppm concentration level.

In evaluating these regulatory options, EPA considered the costs involved in a mandatory removal of PCBs from hydraulic and heat transfer systems to concentration levels of less than 25 ppm. Mandatory immediate removal of PCBs in these systems to levels of less than 25 ppm would severely affect significant segments of the metal forming, die-casting, chemical, plastics and synthetics, and petroleum refining industries. In addition, technological factors may prevent an undetermined percentage of hydraulic and heat transfer systems from achieving an elimination of PCB residues below a 25 ppm concentration level. For reasons related to the internal geometry as well as operating and design characteristics of hydraulic and heat transfer systems, PCB residues tend to persist despite complete draining and refilling. Finally, EPA has concluded that an immediate removal of contaminated systems is not necessary to safeguard human health or the environment from high level risks arising from these uses of PCBs.

EPA has determined that tightening the standard from 50 ppm to 25 ppm would result in approximately 2,300 pounds of PCBs removed from the environment at an estimated cost of approximately \$103 million. EPA also has determined that relaxing the standard from 50 ppm to 100 ppm would

result in an estimated additional 4,000 pounds of PCBs in the environment. The 50 ppm standard would not impose an additional cost over the 1979 PCB Ban since that rule established a requirement that all heat transfer and hydraulic systems reduce PCB levels below 50 ppm by July 1, 1984.

EPA has balanced the cost of these options with the risks from exposure to humans and the environment. While the 100 ppm option is less costly than either the 25 or 50 ppm option, it is less protective of human health and the environment. Conversely, the 25 ppm option results in a lower risk to human health and the environment at a high cost.

EPA received a number of comments on the proposed PCB use authorization for heat transfer and hydraulic fluid. These comments argued for a use authorization at levels between 25 and 100 ppm PCBs, the levels EPA discussed in the proposed rule. No commenters argued for a significantly higher or lower use authorization. Given the EPA analysis described above, the fact that numerous persons have been able to reach a 50 ppm level in their heat transfer and hydraulic fluids, and the fact that comments advocated a range of 25 to 100 ppm, EPA concludes that 50 ppm is reasonable and is setting its use authorization accordingly. EPA also believes that this reauthorization at 50 ppm PCBs would impose minimal additional costs incurred under the use conditions set in the PCB Ban Rule. The minimal additional costs are imposed by the requirement that workers wear protective gloves.

EPA is aware that the total costs estimated in the RIA for lowering the PCB concentration levels in those heat transfer and hydraulic systems that are above 50 ppm are about an order of magnitude greater than the total costs originally projected in 1979 (44 FR 31534). Despite this large difference in total costs, there are only minor differences between the unit cost estimates underlying the 1979 and the present estimates. The differences in the compliance costs per machine developed for the 1984 analysis do not differ substantially from the 1979 estimates.

Data available to the Agency indicate that most systems can achieve a PCB concentration level of less than 50 ppm. In addition, EPA did not receive comments in this rulemaking that the 1979 economic analysis or the current economic analysis were substantially in error. The differences between costs estimated in the current RIA and the 1979 economic analysis apparently have

resulted from different assumptions in projecting the number of affected heat transfer and hydraulic systems, and the volume capacity of these systems.

#### *D. Availability of Substitutes for PCB Fluid in Hydraulic and Heat Transfer Systems*

There exist numerous substitutes for PCBs in hydraulic and heat transfer fluids that have been successfully used by firms to lower the PCB concentration levels in their contaminated systems to less than 50 ppm. Included among the chemical compounds used in non-PCB substitutes for hydraulic fluid are: (1) Phosphate esters; (2) water/glycol solutions; and (3) water/oil emulsions. Water/glycol-based products constitute the leading non-PCB substitutes. In addition, various non-PCB heat transfer fluids are available, such as: (1) Modified esters; (2) synthetic hydrocarbons; (3) polyaromatic compounds; (4) partially hydrogenated and mixed terphenyls; and (5) blends of diphenyls.

#### *E. No Unreasonable Risk Determination*

The Agency has concluded that the risks associated with these uses of PCBs at concentrations of less than 50 ppm are outweighed by the benefits of the continued use of contaminated hydraulic and heat transfer systems, and the costs that are avoided by not requiring the further removal of the PCBs remaining in these systems at less than 50 ppm after July 1, 1984. Therefore, EPA concludes that authorizing the use of PCBs in these systems at concentrations of less than 50 ppm does not present an unreasonable risk of injury to health or the environment for the following reasons:

1. The reauthorization of the use of PCBs in hydraulic and heat transfer fluid at a concentration level of less than 50 ppm with workers wearing protective gloves under high exposure conditions would adequately safeguard workers from risks to human health. In evaluating the exposure from long-term exposure to PCBs from contaminated systems at a 50 ppm level, EPA assumed daily exposure over a work life of approximately 38.5 years. Thus, while the exposures determined by EPA, particularly the dermal absorption, are relatively high, these exposures are overestimated. Furthermore, the requirement to wear gloves would further reduce these exposures.

2. This proposed reauthorization would impose minimal costs additional to those costs incurred under the use conditions in the PCB Ban Rule. According to the Agency's regulatory impact analysis, without any

reauthorization, the impact would be severe, since all contaminated systems could conceivably be removed from service and disposed of under a strict enforcement of the no use provision of section 6(e) of TSCA. The minimal additional costs are imposed by the requirement that workers wear protective gloves.

3. Compared to the option of authorizing use at a 25 ppm level, this reauthorization is more cost-effective. According to the Agency's regulatory impact analysis, compared with a concentration level of 50 ppm for these uses, a 25 ppm performance standard for affected systems would result in approximately 2,400 incremental pounds of PCBs removed from the environment at an estimated incremental cost of at least \$103 million.

4. Allowing the use of PCBs in contaminated hydraulic and heat transfer systems at a 50 ppm concentration level would avoid severe economic consequences for significant segments of the metal forming, die casting, chemical, plastics and synthetics, and petroleum refining industries.

5. There are adequate non-PCB hydraulic and heat transfer fluids for use in contaminated systems to lower the PCB concentration level at least to 50 ppm.

6. The elimination of PCBs from contaminated hydraulic and heat transfer systems may not be technologically feasible through existing retrofit technologies. For reasons related to the internal geometry, and operating and design characteristics of these systems, PCB residues tend to persist despite draining and retrofitting.

#### *V. Use Authorization for PCBs in the Compressors and the Condensate of Natural Gas Pipelines*

##### *A. Background*

In the 1979 PCB Ban Rule, EPA authorized the use of PCBs in the compressors of natural gas pipelines until May 1, 1980. EPA believed that by May 1, 1980, the PCB concentrations in these compressors could be reduced below 50 ppm. However, the PCB concentrations in some of these compressors could not be reduced to below 50 ppm by that date.

Under a compliance monitoring program instituted by EPA and the pipeline companies, the 28 compressors found to contain PCBs have been drained of the PCB liquid and retrofitted. The compliance monitoring program requires that these compressors be monitored following retrofit to ensure that PCB levels are maintained below 50

ppm. In all of the natural gas pipeline compressors found to contain PCBs, the PCB levels have been reduced below 50 ppm.

Liquids found in natural gas pipelines also have been found to contain elevated PCB levels. PCBs were first identified in liquid found in the gas pipelines in January 1981 when a PCB-containing oily condensate was found in the gas meters of some residential customers of a Long Island, New York, distribution company. Under EPA's direction 33 transmission companies undertook voluntary monitoring of this liquid and the natural gas to determine PCB concentrations. Twelve companies which found elevated PCB concentrations in this liquid continued to supply EPA with monitoring data and developed methods to lower the PCB concentrations in the liquid. In addition, EPA Regional Offices have been collecting data on natural gas distribution systems.

Natural gas pipeline liquid sampled under this monitoring program was found to contain PCBs in concentrations higher than 50 ppm. Thus, liquid in the natural gas pipelines as well as pipeline compressors were found to be contaminated with PCBs. EPA's Compliance Monitoring Staff began implementing remedial plans with four basic objectives: (1) To contain the contamination to limited areas of the transmission system; (2) to eliminate any further entry of PCBs into the system; (3) to remove remaining PCB contamination from these systems; and (4) to ensure proper handling of PCBs that were removed.

PCB contamination in the natural gas pipelines is thought to have occurred through several sources. The major sources of contamination are thought to be: (1) The lubricating oils used in natural gas pipeline compressors; (2) "fogging" of the lines with an oil vapor to minimize the entrainment of dust and other particles in the pipeline system; and (3) migration of PCBs from contaminated lines into other systems. By the 1980s, fogging of pipelines was virtually non-existent due to improved dry filters, and the replacement of cast-iron pipe with welded steel pipes. PCBs have not been used as lubricating oils in compressors since the 1970s.

Since the compliance monitoring program began, two companies have consistently found PCBs below the 50 ppm contamination level in the liquid found in natural gas pipeline systems. Ten transmission companies are still reporting under the compliance monitoring program. These companies are working to remove the remaining

PCB contaminated liquids from their lines.

With the overturning of the 50 ppm regulatory cutoff as a consequence of *EDF v. EPA*, the status of natural gas pipelines with less than 50 ppm PCBs in the compressors and in the pipeline liquid would be in doubt after the stay of the court's mandate is lifted. Several natural gas companies submitted comments on the proposed rule requesting an authorization for the continued use of PCBs in the compressors and in the liquid found in natural gas pipelines. EPA is responding to these comments by authorizing the use of PCBs in compressors and in the liquid found in natural gas pipelines at concentrations of less than 50 ppm.

EPA has determined that the use of PCBs in the compressors and in the liquid found in natural gas pipelines at concentrations of less than 50 ppm does not present an unreasonable risk of injury to human health or the environment. Therefore, EPA is authorizing this use of PCBs.

#### *B. Human Health and Environmental Risks*

The major potential human exposure to PCBs in the compressors and liquid found in natural gas pipelines is occupational. Occupational exposure is limited by several factors. First, natural gas is flammable and toxic; thus, natural gas pipelines are necessarily closed systems. Second, the natural gas pipeline liquid is removed from enclosed fixtures at specific collection points. Third, it appears from data submitted by gas transmission companies that draining of the natural gas pipeline liquid does not occur daily, but approximately monthly. Indeed, companies have often found no natural gas pipeline liquid at collection points during some periods of the year. Fourth, many companies require that employees wear protective clothing when handling this liquid. In order to insure that all workers are aware that this equipment contains PCBs, EPA is requiring that these compressors be marked with PCB labels as described at 40 CFR 761.40.

EPA has also examined monitoring data for indoor air concentrations of PCBs in homes using natural gas. Based on these data, the Agency has found no evidence that PCBs in the compressors or in the liquid of natural gas pipelines are entering customers' homes. Since exposure and toxicity are the two basic elements of risk, if there is no additional exposure to PCBs attributable to the natural gas, there will be no additional risk to the consumers.

The exposure assessment for PCBs in the compressors and liquids of natural

gas pipelines is included as Attachment Z (volume II) of the support document entitled "Final Report: Exposure Assessment for Incidentally Produced Polychlorinated Biphenyls." For further information concerning this exposure assessment, please consult that document.

#### *C. Economic Impact Analysis*

If the Agency does not authorize the use of PCBs in natural gas compressors and the liquids in natural gas pipelines, the result would be a ban on all contaminated compressors and natural gas pipelines after the stay of mandate is lifted by the court. Thus, in the absence of action by EPA, the industry must comply with a zero PCB level.

Only 28 remaining compressors are contaminated with PCBs. The costs of replacing all 28 compressors alone could be \$227 million, based on average capital and installation costs for 1978 through 1981. The cost of pipeline replacement is estimated to be at least \$30 billion, based on average capital and installation costs for 1978 through 1981. These costs do not take into account the unknown amount of distribution system pipeline that would be affected by a ban on PCBs. The combined replacement cost, system down-time, and reductions in natural gas supply during replacement activities would have serious implications for the national economy. Since a use authorization would avoid these costs, these estimates represent the benefits that would result from granting an authorization.

The only cost that would be incurred specifically from this rule would be the cost of labeling the remaining 28 compressors that contain PCBs. EPA is requiring that natural gas pipeline compressors be marked with the M<sub>1</sub> marker described at 40 CFR 761.40. This is the same marker that is currently in use on other PCB-containing equipment. The cost of this labeling is expected to be minimal.

#### *D. Availability of Substitutes for PCBs in Compressors and Natural Gas Pipelines*

As discussed in the background section of this Unit of the preamble, PCBs are no longer used for fogging natural gas pipelines or in compressors as lubricating oils. Several substitutes for PCB lubricating oils are available. These substitutes for PCB fluids have been used in natural gas pipeline compressors for many years.

#### *E. No Unreasonable Risk Determination*

The Agency has concluded that the risks associated with these uses of PCBs at concentrations of less than 50 ppm

are outweighed by the benefits of the continued use of compressors and liquids found in natural gas pipelines containing low levels of PCBs, and the costs that are avoided by not requiring the further removal of PCBs remaining in the compressors and pipeline liquids. Therefore, EPA concludes that authorizing the use of PCBs in these systems at concentrations of less than 50 ppm does not present an unreasonable risk of injury to health or the environment for the following reasons:

1. The authorization of the use of PCBs in compressors and in the liquids of natural gas pipelines at a concentration level of less than 50 ppm would adequately safeguard workers and consumers from risk to human health.

2. According to the Agency's economic impact analysis, the potential impact of no authorization would be severe, since all contaminated systems would conceivably have to be removed from service and disposed of under a strict enforcement of section 6(e) of TSCA.

3. There exist adequate substitutes for PCBs. PCB levels in contaminated systems will continue to decline below 50 ppm without further Agency action as PCB substitutes are used, and as equipment contaminated with PCBs is replaced.

#### *VI. Relationship to Other PCB Regulations*

The major focus of this rule is the control of the manufacture, processing, distribution in commerce, use, and disposal of PCBs that are not now regulated under other EPA rules. This unit reviews other EPA regulations to control PCBs, as well as other relevant Federal rules. Previous units of this preamble have already discussed the relationship of this rule to the Closed and Controlled Waste Manufacturing Processes Rule, and the regulations for disposal of PCBs under TSCA.

#### *A. Amendments to the PCB Electrical Equipment Rule*

Authorizations for the use and servicing of transformers, capacitors, electromagnets, and other electrical equipment with fluid containing 50 ppm or greater PCBs were promulgated in the Electrical Equipment Rule published in the Federal Register of August 25, 1982 (47 FR 37342). These authorizations amended the PCB Ban Rule, which included conditions for the servicing of transformers and electromagnets. No section of this rule affects any provision of the Electrical Equipment Rule.

### B. Regulations Under the Federal Pesticide and Food, Drug, and Cosmetic Statutes

Two Federal statutes that affect chemicals which may contain inadvertently generated PCBs are the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. 136 *et seq.*, and the Federal Food, Drug, and Cosmetic Act (FFDCA), 21 U.S.C. 321 *et seq.* If the manufacture, processing, distribution in commerce, or use of a substance is regulated under either FIFRA or FFDCA, the substance is not subject to regulation under TSCA insofar as the substance is manufactured, processed, or distributed in commerce for use solely as a pesticide, food, food additive, drug, cosmetic, or medical device. If a substance has multiple uses, only some of which are regulated under FIFRA or FFDCA, the manufacture, processing, distribution in commerce, and use of the substance for the remaining uses would come within the jurisdiction of TSCA.

The Agency has determined that raw materials, intermediates, and inert ingredients produced or used in the manufacture of pesticides are substances or mixtures that may be regulated under TSCA. Furthermore, while a chemical manufactured for use as a pesticide is regulated under FIFRA, a chemical that is manufactured for undetermined purposes is regulated under TSCA. Thus, PCBs that are unintentional impurities in a chemical that is for undetermined purposes are subject to this regulation from the time they are first manufactured until they are identified as part of a pesticide product.

EPA has determined that since the Food and Drug Administration (FDA) considers intermediates or catalysts to be components of a food, food additive, drug, cosmetic, or medical device regulated under FFDCA, chemicals used as intermediates or catalysts for these purposes are not regulated under TSCA. As soon as the FDA regulates a product, its manufacture, processing, or distribution in commerce solely for an FDA-regulated use is excluded from the jurisdiction of TSCA. Hence, no provisions of this rule will apply to the manufacture, processing, or distribution in commerce of intermediates or catalysts with PCBs generated as unintentional impurities solely for an FDA-regulated use.

### C. PCB Effluent Standards Under Section 307(a) of the Clean Water Act

Under section 307(a) of the Clean Water Act (CWA), 33 U.S.C. 1317, EPA promulgated final effluent standards for

the discharge of PCBs into navigable waters (40 CFR 129.105; 42 FR 8532, February 2, 1977) by manufacturers of intentionally produced PCB fluid (i.e., Aroclor products), manufacturers of electrical capacitors, and manufacturers of electrical transformers; and also prohibits the discharge of Aroclor PCBs as process wastes.

Today's regulation, in contrast, is restricted to inadvertently generated PCBs and certain processes that involve the use of recycled PCB-contaminated materials. Therefore, the TSCA and the CWA section 307 regulations cover different persons and different operations and have no effect on each other. Both regulations apply independently.

### D. PCB Effluent Limitation Guidelines, New Source Performance Standards, and Permits Under the CWA

Industrial wastewater discharges are generally regulated under the CWA, and not under TSCA. Today's rule necessitates that EPA determine what levels of PCBs may be discharged to water in manufacturing and recycling processes under TSCA. Otherwise, all PCB discharges to water would be banned as of the date the court's mandate in *EDF v. EPA* is issued (see Unit II.B of this preamble.). The deadline for promulgating today's TSCA regulation, however, presents a problem in coordinating this regulation with activities under the CWA. The Agency's resolution of this problem and the historical background are explained in this section.

Under the CWA, wastewater discharges are limited by a variety of technology-based effluent limitations and standards with more stringent water quality-based standards applied as needed. Therefore, CWA requirements may differ from those promulgated today. Such requirements may also be imposed by states or local governments instead of or in addition to those mandated by EPA.

The existence of less stringent CWA requirements at a particular facility does not relieve any discharger from the obligation to comply with today's TSCA rule. Similarly, nothing in the TSCA rule affects the authority or prevents EPA or any state or local government from applying or enforcing more stringent requirements to facilities regulated under the CWA or state or local law.

One ongoing CWA rulemaking is particularly relevant to this TSCA rule. On November 18, 1982, EPA proposed CWA effluent limitations guidelines based on "best available technology" (BAT) and "new source performance standards" (NSPS) which would limit

the discharge of Aroclor 1242 from mills in the deink subcategory of the pulp, paper, and paperboard point source category where fine and tissue papers are made (47 FR 52086). The proposed BAT effluent limitations (maximum for any one day) for Aroclor 1242 were: (1) 0.00014 kilograms per thousand kilograms (kg/kkg) where fine paper is produced; and (2) 0.00018 kg/kkg where tissue paper is produced. The proposed NSPS (maximum for any one day) for Aroclor 1242 were: (1) 0.00011 kg/kkg where fine paper is produced; and (2) 0.00014 kg/kkg where tissue paper is produced.

There are a number of coordination issues between this action under TSCA and regulation of wastewater discharges under the CWA. For example, the levels proposed under the CWA for pulp and paper mills were based on more extensive data relating just to deink mills, while the levels determined under today's rule are based on data applicable to all water wastestreams. Because the TSCA and CWA regulations would cover the same facilities in the case of deink mills, EPA needs time to coordinate data collected in the rulemaking proceeding for today's rule and the proceeding under the CWA. Additionally, since the November 1982 proposal, the EPA Industrial Environmental Research Laboratory in Cincinnati, Ohio has developed additional data for detecting and quantifying Aroclor in industrial effluents.

EPA would like to consider all these data in support of today's rule to determine whether more stringent limits under TSCA should be set for deink mill discharges. The Agency, however, must respond to the July 1, 1984 deadline. In today's rule, therefore, EPA is setting final limits for recycled PCBs based on the data in the TSCA record and on TSCA authority. These limits may be superseded by more stringent limits established under the CWA.

### VII. Judicial Review

Judicial review of this final rule may be available under section 19 of TSCA in the United States Court of Appeals for the District of Columbia Circuit or for the circuit in which the person seeking review resides or has its principal place of business. To provide all interested persons an equal opportunity to file a timely petition for judicial review and to avoid so called "races to the courthouse," EPA has decided to promulgate this rule for purposes of judicial review two weeks after publication in the Federal Register, as reflected in "DATES" in this notice.

## VIII. Official Rulemaking Record

In accordance with the requirements of section 19(a)(3) of TSCA, EPA is publishing the following list of documents, which constitutes the record of this rulemaking. However, public comments are not listed, because these documents are exempt from Federal Register listing under section 19(a)(3). A full list of these materials will be available on request from EPA's TSCA Assistance Office listed under "FOR FURTHER INFORMATION CONTACT."

## A. Previous Rulemaking Records

(1) Official Rulemaking Record from "Polychlorinated Biphenyls (PCBs) Disposal and Marking Rule," Docket No. OPTS-68005, 43 FR 7150, February 17, 1978.

(2) Official Rulemaking Record from "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions Rule," 44 FR 31514, May 31, 1979.

(3) Official Rulemaking Record from "Polychlorinated Biphenyls (PCBs); Proposed Rulemaking for PCB Manufacturing Exemptions," Docket No. OPTS-68001, 44 FR 31584, May 31, 1979.

(4) Official Rulemaking Record from "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions; Use in Electrical Equipment," Docket No. OPTS-62015, 47 FR 37342, August 25, 1982.

(5) Official Rulemaking Record from "Polychlorinated Biphenyls (PCBs); Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions; Use in Closed and Controlled Waste Manufacturing Processes," Docket No. OPTS-62017, 47 FR 46980, October 21, 1982.

(6) Official Rulemaking Record from "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions; Amendment to Use Authorization for PCB Railroad Transformers," Docket No. OPTS-62020, 48 FR 124, January 3, 1983.

(7) Official Rulemaking Record from "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, and Distribution in Commerce Exemptions," Docket No. OPTS-68006, 48 FR 50486, November 1, 1983.

(8) Official Rulemaking Record from "Polychlorinated Biphenyls (PCBs); Manufacturing, Processing, Distribution in Commerce and Use Prohibitions; PCBs in Concentrations Below Fifty Parts Per Million," Docket No. OPTS-62018, 48 FR 27619, May 20, 1983.

## B. Federal Register Notices

(9) 43 FR 50905, November 1, 1978, USEPA, "Procedures for Rulemaking Under Section 6 of the Toxic Substances Control Act; Interim Procedural Rules for Polychlorinated Biphenyls (PCBs) Ban Exemption."

(10) 44 FR 108, January 2, 1979, USEPA, "Polychlorinated Biphenyls (PCBs); Policy for Implementation and Enforcement."

(11) 44 FR 31558, May 31, 1979, USEPA, "Procedures for Rulemaking Under Section 6 of the Toxic Substances Control Act; Interim Procedural Rules for Exemptions from the Polychlorinated Biphenyl (PCB) Processing and Distribution in Commerce Prohibitions."

(12) 44 FR 31584, May 31, 1979, USEPA, "Polychlorinated Biphenyls (PCBs); Proposed Rulemaking for PCB Manufacturing Exemptions."

(13) 44 FR 42727, July 20, 1979, USEPA, "Proposed Rulemaking for Polychlorinated Biphenyls (PCBs); Manufacturing Exemptions; Notice of Receipt of Additional Manufacturing Petitions and Extension of Reply Comment Period."

(14) 45 FR 14247, March 5, 1980, USEPA, "Polychlorinated Biphenyls (PCBs); Statement of Policy on All Future Exemption Petitions."

(15) 45 FR 29115, May 1, 1980, USEPA, "Polychlorinated Biphenyls (PCBs); Expiration of the Open Border Policy for PCB Disposal."

## C. Support Documents

(16) CMA, EDF, NRDC, "Recommendation of the Parties for a Final EPA Rule on Inadvertent Generation of PCBs," April 13, 1983.

(17) USEPA, OPTS, EED, "Draft Report: Estimation of Environmental Concentrations of Incidentally Generated Polychlorinated Biphenyls" (July 16, 1982).

(18) USEPA, OPTS, EED, "Draft Report: Modeling of PCBs in Ground Water" (July 14, 1983).

(19) USEPA, OPTS, EED, "Polychlorinated Biphenyls in Human Adipose Tissue and Mother's Milk" (November 12, 1982).

(20) USEPA, OPTS, EED, "Exposure Assessment for Polychlorinated Biphenyls (PCBs) in Incidental Production, Recycling, and Selected Authorized Uses, Volumes I-IV" (Final Report, May 2, 1984).

(21) USEPA, OPTS, EED, "Environmental Risk and Hazard Assessment for Various Isomers of Polychlorinated Biphenyls (Monochlorobiphenyl through Hexachlorobiphenyl and Decachlorobiphenyl)" (April 1984).

(22) USEPA, OPTS, ETD, "Regulatory Impact Analysis of the Final Rule Regulating Inadvertent PCB Generation from Uncontrolled Sources, Volumes I-II" (April 1984).

(23) USEPA, OPTS, ETD, "Regulatory Impact Analysis of PCB Use Authorizations for Hydraulic and Heat Transfer Systems" (June 1984).

(24) USEPA, OPTS, ETD, "Regulatory Impact Analysis of the PCB Use Authorization for Natural Gas Systems" (April 1984).

(25) USEPA, OPTS, EED, "Guidance Document on Sampling and Sample Selection for Uncontrolled PCBs" (1983).

(26) USEPA, OPTS, EED, "Estimation of Releases from Spills of Inadvertently Produced PCBs" (April 1982).

(27) USEPA, OPTS, EED, "Summary of Organic Chemical Product Classes Potentially Containing Inadvertently Generated PCBs" (December 1982).

(28) USEPA, OPTS, EED, "Organic Chemical Processes Leading a Generation of Incidental Polychlorinated Biphenyls" (February 10, 1983).

(29) USEPA, ORD, Environmental Monitoring and Support Laboratory, "TEST METHOD: Organochlorine Pesticides and PCBs—Method 608" (July 1982).

(30) USEPA, OPTS, EED, "Response to Comments on the Proposed Uncontrolled PCBs Rule," (June 1984).

(31) USEPA, OPTS, EED, Memorandum from John Smith (EED, DDB) to Sherry Sterling (EED, CRB), "Practical Limit of Quantitation of EPA Method 606 for Use in Aroclor Analysis of All Wastewaters" (June 5, 1984).

## IX. Executive Order 12291

Under Executive Order 12291, issued February 17, 1981, EPA must determine whether a rule is a "major rule" and, therefore, subject to the requirement that a regulatory impact analysis be prepared. EPA has concluded that this rule is not a major rule as the term is defined in section 1(b) of the Executive Order.

EPA made this determination on the findings that the annual effect of the rule on the economy would be less than \$100 million; it would not cause a major increase in costs or prices for any sector of the economy or for any geographic region; and it would not result in any significant adverse effects on competition, employment, investment, productivity, or innovation or on the ability of United States enterprises to compete with foreign enterprises in domestic or foreign markets. This rule will allow certain manufacturing and recycling of PCBs that would otherwise

be prohibited by section 6(e) of TSCA. In addition, this rule will allow the use of PCBs in certain hydraulic and heat transfer system, and in the compressors and in the condensate of natural gas pipelines. Therefore, this rule will reduce the overall costs and economic impact of section 6(e) of TSCA.

This rule excludes certain manufacturing processes from statutory requirements to file annual petitions for exemption under section 6(e)(3)(B) of TSCA. EPA has estimated in the regulatory impact analysis for this rule that resulting cost savings would range from \$155 million to \$1.6 billion. In addition, EPA is authorizing: (1) The use of PCBs in hydraulic and heat transfer fluid at concentrations of less than 50 ppm for the remaining useful lives of these systems, and (2) the use of PCBs in compressors and in the condensate of natural gas pipelines at concentrations of less than 50 ppm.

Although this rule is not a major rule, EPA has prepared to the extent possible, a Regulatory Impact Analysis using the guidance in the Executive Order. This rule was submitted to the Office of Management and Budget (OMB) prior to publication, as required by the Executive Order.

#### X. Regulatory Flexibility Act

Under section 605(b) of the Regulatory Flexibility Act, 5 U.S.C. 605(b), the Administrator may certify that a rule will not, if promulgated, have a significant impact on a substantial number of small entities and, therefore, does not require a regulatory flexibility analysis.

This rule excludes certain manufacturing processes from statutory requirements to file annual petitions for exemption under section 6(e)(3)(B) of TSCA. In addition, the rule will allow the indefinite use of PCBs in hydraulic and heat transfer fluid with concentration levels of less than 50 ppm, and in the compressors and condensate of natural gas pipelines at concentrations of less than 50 ppm.

For those persons who would qualify under the conditions of this rule, the effect will be the avoidance of costs associated with section 6(e) of TSCA, and EPA regulations at 40 CFR Part 761. Since EPA expects this rule to have no negative economic effect to any business entity, I certify that this rule will not have a significant economic impact on a substantial number of small entities.

#### XI. Paperwork Reduction Act

The Paperwork Reduction Act of 1980 (PRA), 44 U.S.C. 3501 et seq., authorizes the Director of the Office of

Management and Budget (OMB) to review certain information collection requests by Federal agencies. EPA has determined that the recordkeeping, reporting, and certification requirements of this proposed rule constitute a "collection of information," as defined in 44 U.S.C. 3501(c). The information collection requirements in this rule (summarized in Unit II of this preamble) have been submitted to the Office of Management and Budget (OMB) under section 3504(b) of the PRA. OMB has assigned the control number 2070-0008 to this final rule.

#### List of Subjects in 40 CFR Part 761

Hazardous materials, Labeling, Polychlorinated biphenyls, Recordkeeping and reporting requirements, Environmental protection. (Sec. 6, Pub. L. 94-408, 90 Stat. 2020 (15 U.S.C. 2605))

Dated: June 27, 1984,  
Alvin L. Alm,  
Acting Administrator.

#### PART 761—[AMENDED]

Therefore, 40 CFR Part 761 is amended as follows:

1. In § 761.1, paragraphs (b) and (f) are revised to read as follows:

##### § 761.1—Applicability.

(b) This part applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs or PCB items. Substances that are regulated by this rule include, but are not limited to, dielectric fluids, contaminated solvents, oils, waste oils, heat transfer fluids, hydraulic fluids, paints, sludges, slurries, dredge spoils, soils, materials contaminated as a result of spills, and other chemical substances or combination of substances, including impurities and byproducts and any byproduct, intermediate or impurity manufactured at any point in a process. Most of the provisions of this part apply to PCBs only if PCBs are present in concentrations above a specified level. For example, Subpart D applies generally to materials at concentrations of 50 parts per million (ppm) and above. Also certain provisions of Subpart B apply to PCBs inadvertently generated in manufacturing processes at concentrations specified in the definition of "PCB" under § 761.3. No provision specifying a PCB concentration may be avoided as a result of any dilution, unless otherwise specifically provided.

(f) Unless and until superseded by any new more stringent regulations issued under EPA authorities, or any permits or any pretreatment requirements issued by EPA, a state or local government that affect release of PCBs to any particular medium:

(1) Persons who inadvertently manufacture or import PCBs generated as unintentional impurities in excluded manufacturing processes, as defined in § 761.3, are exempt from the requirements of Subpart B of this part, provided that such persons comply with Subpart J of this Part, as applicable.

(2) Persons who process, distribute in commerce, or use products containing PCBs generated in excluded manufacturing processes defined in § 761.3 are exempt from the requirements of Subpart B provided that such persons comply with Subpart J of this part, as applicable.

(3) Persons who process, distribute in commerce, or use products containing recycled PCBs defined in § 761.3, are exempt from the requirements of Subpart B of this part, provided that such persons comply with Subpart J of this part, as applicable.

2. In § 761.3, the definitions of "closed manufacturing process" and "controlled waste manufacturing process" are removed, the definitions of "excluded manufacturing process" and "recycled PCBs" are added, and the definitions of "PCB" and "PCB item" are revised to read as follows:

##### § 761.3 Definitions.

"Closed manufacturing process" [Removed].

"Controlled waste manufacturing process" [Removed].

"Excluded manufacturing process" means a manufacturing process in which quantities of PCBs, as determined in accordance with the definition of inadvertently generated PCBs, calculated as defined, and from which releases to products, air, and water meet the requirements of (1) through (5) of this definition, or the importation of products containing PCBs as unintentional impurities, which products meet the requirements of (1) and (2) of this definition.

(1) The concentration of inadvertently generated PCBs in products leaving any manufacturing site or imported into the United States must have an annual average of less than 25 ppm, with a 50 ppm maximum.

(2) The concentration of inadvertently generated PCBs in the components of detergent bars leaving the manufacturing site or imported into the United States must be less than 5 ppm.

(3) The release of inadvertently generated PCBs at the point at which emissions are vented to ambient air must be less than 10 ppm.

(4) The amount of inadvertently generated PCBs added to water discharged from a manufacturing site must be less than 100 micrograms per resolvable gas chromatographic peak per liter of water discharged.

(5) Disposal of any other process wastes above concentrations of 50 ppm PCB must be in accordance with Subpart D of this part.

"PCB" and "PCBs" means any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substance. Refer to § 761.1(b) for applicable concentrations of PCBs. PCB and PCBs as contained in PCB items are defined in § 761.3. For any purposes under this Part, inadvertently generated non-Aroclor PCBs are defined as the total PCBs calculated following division of the quantity of monochlorinated biphenyls by 50 and dichlorinated biphenyls by 5.

"PCB Item" is defined as any PCB Article, PCB Article Container, PCB Container, or PCB Equipment, that deliberately or unintentionally contains or has a part of it any PCB or PCBs.

"Recycled PCBs" are defined as those intentionally manufactured PCBs which appear in the processing of paper products or asphalt roofing materials as PCB-contaminated raw materials and which meet the requirements of (1) through (5) of this definition.

(1) The concentration of Aroclor PCBs in paper products leaving any manufacturing site or imported into the United States must have an annual average of less than 25 ppm with a 50 ppm maximum.

(2) There are no detectable concentrations of Aroclor PCBs in asphalt roofing materials.

(3) The release of Aroclor PCBs at the point at which emissions are vented to ambient air must be less than 10 ppm.

(4) The amount of Aroclor PCBs added to water discharged from a processing site must at all times be less than 3 micrograms per liter ( $\mu\text{g/l}$ ) for total Aroclors (roughly 3 parts per billion (3 ppb)).

(5) Disposal of any other process wastes above concentrations of 50 ppm PCB must be in accordance with Subpart D of this part.

3. In § 761.20 the fourth sentence of the introductory text, paragraphs (a), (b)(1) and (b)(2), the introductory text of paragraph (c), and paragraphs (c)(1) and (c)(2) are revised; and paragraph (c)(4) is added to read as follows:

#### § 761.20 Prohibitions.

\*\*\* In addition, the Administrator hereby finds, under the authority of section 12(a)(2) of TSCA, that the manufacture, processing, and distribution in commerce for export from the United States of PCBs at concentrations of 50 ppm or greater and of PCB items with PCB concentrations of 50 ppm or greater presents an unreasonable risk of injury to health within the United States.

(a) No person may use any PCB, or any PCB item regardless of concentration, in any manner other than in a totally enclosed manner within the United States unless authorized under § 761.30, except that an authorization is not required to use those PCBs or PCB items resulting from an excluded manufacturing process or recycled PCBs defined in § 761.3, provided all applicable conditions of § 761.1(f) are met.

(b) \*\*\*

(1) No person may manufacture PCBs for use within the United States or manufacture PCBs for export from the United States without an exemption, except that an exemption is not required for PCBs manufactured in an excluded manufacturing process as defined in § 761.3, provided that all applicable conditions of § 761.1(f) are met.

(2) PCBs at concentrations less than 50 ppm may be imported or exported for purposes of disposal.

(c) No person may process or distribute in commerce any PCB, or any PCB item regardless of concentration, for use within the United States or for export from the United States without an exemption, except that an exemption is not required to process or distribute in commerce PCBs or PCB items resulting from an excluded manufacturing process as defined in § 761.3, or to process or distribute in commerce recycled PCBs as defined in § 761.3 provided that all applicable conditions of § 761.1(f) are met.

(1) PCBs at concentrations of 50 ppm or greater, or PCB items with PCB concentrations of 50 ppm or greater, sold before July 1, 1979 for purposes other

than resale may be distributed in commerce only in a totally enclosed manner after that date.

(2) PCBs at concentrations of 50 ppm or greater, or PCB items with PCB concentrations of 50 ppm or greater may be processed and distributed in commerce in compliance with the requirements of this Part for purposes of disposal in accordance with the requirements of § 761.60.

(4) PCBs, at concentrations of less than 50 ppm, or PCB items, with concentrations of less than 50 ppm, may be processed and distributed in commerce for purposes of disposal.

4. In § 761.30, paragraphs (d), (e), and (f) are revised to read as follows:

#### § 761.30 Authorizations.

(d) Use in heat transfer systems. After July 1, 1984, intentionally manufactured PCBs may be used in heat transfer systems in a manner other than a totally enclosed manner at a concentration level of less than 50 ppm provided that the requirements of paragraphs (d) (1) through (7) of this section are met.

(1) Each person who owns a heat transfer system that ever contained PCBs at concentrations above 50 ppm must test for the concentration of PCBs in the heat transfer fluid of such a system no later than November 1, 1979, and at least annually thereafter. All test sampling must be performed at least three months after the most recent fluid refilling. When a test shows that the PCB concentration is less than 50 ppm, testing under this paragraph is no longer required.

(2) Within six months of a test performed under paragraph (d)(1) of this section that indicates that a system's fluid contains 50 ppm or greater PCB (0.005% on a dry weight basis), the system must be drained of the PCBs and refilled with fluid containing less than 50 ppm PCB. Topping-off with heat transfer fluids containing PCB concentrations of less than 50 ppm is permitted.

(3) After November 1, 1979, no heat transfer system that is used in the manufacture or processing of any food, drug, cosmetic or device, as defined in section 201 of the Federal Food, Drug, and Cosmetic Act, may contain transfer fluid with 50 ppm or greater PCB (0.005% on a dry weight basis).

(4) Addition of fluids containing PCB concentrations greater than 50 ppm is prohibited.

(5) Data obtained as a result of paragraph (d)(1) of this section must be

retained for five years after the heat transfer system reaches 50 ppm PCB.

(6) Each person who owns a heat transfer system that contains PCBs must provide workers with gloves made of viton elastomer to protect workers from dermal exposure to PCBs.

(7) All persons who maintain a heat transfer system must wear viton elastomer gloves while doing maintenance work on that system.

(c) Use in hydraulic systems. After July 1, 1984, intentionally manufactured PCBs may be used in hydraulic systems in a manner other than a totally enclosed manner at a concentration level of less than 50 ppm provided that the requirements in paragraphs (e) (1) through (7) of this section are met.

(1) Each person who owns a hydraulic system that ever contained PCBs at concentrations above 50 ppm must test for the concentration of PCBs in the hydraulic fluid of each system no later than November 1, 1979, and at least annually thereafter. All test sampling must be performed at least three months after the most recent fluid refilling. When a test shows that the PCB concentration is less than 50 ppm, testing under this paragraph is no longer required.

(2) Within six months of a test under paragraph (e)(1) of this section that indicates that a system's fluid contains 50 ppm or greater PCB (0.005% on a dry weight basis), the system must be drained of the PCBs and refilled with fluid containing less than 50 ppm PCB. Topping-off with hydraulic fluids containing PCB concentrations less than 50 ppm to reduce PCB concentrations is permitted.

(3) Addition of PCBs at concentrations of greater than 50 ppm is prohibited.

(4) Hydraulic fluid may be drained from a hydraulic system and filtered, distilled, or otherwise serviced in order to reduce the PCB concentration below 50 ppm.

(5) Data obtained as a result of paragraph (e)(1) of this section must be retained for five years after the hydraulic system reaches 50 ppm.

(6) Each person who owns a hydraulic system that contains PCBs must provide gloves made of viton elastomer to protect workers from dermal exposure to PCBs.

(7) All persons who maintain a hydraulic system that contains PCBs must wear viton elastomer gloves while doing maintenance work on that system.

(i) Use in compressors and in the liquid of natural gas pipelines. PCBs may be used indefinitely in the compressors and in the liquids of

natural gas pipelines at a concentration level of less than 50 ppm provided that they are marked in accordance with § 761.45(a).

5. In § 761.60, paragraphs (a)(1), the introductory text of (a)(4) and (a)(5), (a)(6), (b)(3), the introductory text of (b)(5), (b)(6), the introductory text of (c)(1), (c)(2), and (d)(1) are revised to read as follows:

#### § 761.60 Disposal requirements.

(a) PCBs. (1) Except as provided in paragraphs (a) (2), (3), (4), and (5) of this section, PCBs at concentrations of 50 ppm or greater must be disposed of in an incinerator which complies with § 761.70.

(4) Any non-liquid PCBs at concentrations of 50 ppm or greater in the form of contaminated soil, rags, or other debris shall be disposed of:

(5) All dredged materials and municipal sewage treatment sludges that contain PCBs at concentrations of 50 ppm or greater shall be disposed of:

(6) When storage is desired prior to disposal, PCBs at concentrations of 50 ppm or greater shall be stored in a facility which complies with § 761.65.

(b) PCB hydraulic machines. PCB hydraulic machines containing PCBs at concentrations of 50 ppm or greater such as die casting machines may be disposed of as municipal solid waste or storage provided that the machines are drained of all free-flowing liquid and the liquid is disposed of in accordance with the provisions of paragraph (a) of this section. If the PCB liquid contains 1000 ppm PCB or greater, then the hydraulic machine must be flushed prior to disposal with a solvent containing less than 50 ppm PCB under transformer solvents at paragraph (b)(1)(i)(B) of this section and the solvent disposed of in accordance with paragraph (a) of this section.

(5) Other PCB Articles. PCB articles with concentrations at 50 ppm or greater must be disposed of:

(8) Storage of PCB Articles. Except for a PCB Article described in paragraph (b)(2)(ii) of this section and hydraulic machines that comply with the municipal solid waste disposal provisions described in paragraph (b)(3) of this section, any PCB Article with PCB concentrations at 50 ppm or greater,

shall be stored in accordance with § 761.65 prior to disposal.

(c) PCB Containers. (1) Unless decontaminated in compliance with § 761.79 or as provided in paragraph (c)(2) of this section, a PCB container with PCB concentrations at 50 ppm or greater shall be disposed of:

(3) Prior to disposal, a PCB container with PCB concentrations at 50 ppm or greater shall be stored in a facility which complies with § 761.65.

(d) Spills. (1) Spills and other uncontrolled discharges of PCBs at concentrations of 50 ppm or greater constitute the disposal of PCBs.

6. In § 761.65 the following introductory text is added at the beginning of the section:

#### § 761.65 Storage for disposal.

This section applies to the storage for disposal of PCBs at concentrations of 50 ppm or greater and PCB items with PCB concentrations of 50 ppm or greater.

7. In § 761.70, the following introductory text is added to the beginning of the section:

#### § 761.70 Incineration.

This section applies to facilities used to incinerate PCBs required to be incinerated by this part.

8. In § 761.75, the following introductory text is added to the beginning of the section:

#### § 761.75 Chemical waste landfills.

This section applies to facilities used to dispose of PCBs in accordance with the part.

9. In § 761.180, the following introductory text is added to the beginning of the section:

#### § 761.180 Records and monitoring.

This section contains recordkeeping and reporting requirements that apply to PCBs, PCB items, and PCB storage and disposal facilities that are subject to the requirements of the part.

10. In § 761.185, the section is revised and OMB control number 2070-0098 is added to read as follows:

§ 761.185 Certification program and retention of records by exporters and persons generating PCBs in excluded manufacturing processes.

(a) In addition to meeting the basic requirements of § 761.1(f) and the

definition of excluded manufacturing processes at § 761.3, manufacturers with processes inadvertently generating PCBs and importers of products containing inadvertently generated PCBs must report to EPA any excluded manufacturing process or imports for which the concentration of PCBs in products leaving the manufacturing site or imported is greater than 2 micrograms per gram (2 µg/g, roughly 2-ppm) for any resolvable gas chromatographic peak. Such reports must be filed by October 1, 1984 or, if no processes or imports require reports at the time, within 90 days of having processes or imports for which such reports are required.

(b) Manufacturers required to report by paragraph (a) of this section must transmit a letter notifying EPA of the number, the type, and the location of excluded manufacturing processes in which PCBs are generated when the PCB level in products leaving any manufacturing site is greater than 2 µg/g for any resolvable gas chromatographic peak. Importers required to report by paragraph (a) of this section must transmit a letter notifying EPA of the concentration of PCBs in imported products when the PCB concentration of products being imported is greater than 2 µg/g for any resolvable gas chromatographic peak. Persons must also certify the following:

(1) Their compliance with all applicable requirements of § 761.1(f), including any applicable requirements for air and water releases and process waste disposal.

(2) Whether determinations of compliance are based on actual monitoring of PCB levels or on theoretical assessments.

(3) That such determinations of compliance are being maintained.

(4) If the determination of compliance is based on a theoretical assessment, the letter must also notify EPA of the estimated PCB concentration levels generated and released.

(c) Any person who reports pursuant to paragraph (a) of this section:

(1) Must have performed either a theoretical analysis or actual monitoring of PCB concentrations.

(2) Must maintain for a period of three years after ceasing process operations or importation, or for seven years, whichever is shorter, records containing the following information:

(i) *Theoretical analysis.*

Manufacturers records must include: the reaction or reactions believed to be generating PCBs; the levels of PCBs generated; and the levels of PCBs released. Importers records must include: the reaction or reactions

believed to be generating PCBs and the levels of PCBs generated; the basis for all estimations of PCB concentrations; and the name and qualifications of the person or persons performing the theoretical analysis; or

(ii) *Actual monitoring.* (A) The method of analysis.

(B) The results of the analysis, including data from the Quality Assurance Plan.

(C) Description of the sample matrix.

(D) The name of the analyst or analysts.

(E) The data and time of the analysis.

(F) Numbers for the lots from which the samples are taken.

(d) The certification required by paragraph (b) of this section must be signed by a responsible corporate officer. This certification must be maintained by each facility or importer for a period of three years after ceasing process operation or importation, or for seven years, whichever is shorter, and must be made available to EPA upon request. For the purpose of this section, a responsible corporate officer means:

(1) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation.

(2) The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25,000,000 (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(e) Any person signing a document under paragraph (d) of this section shall also make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate information. Based on my inquiry of the person or persons directly responsible for the gathering information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for falsifying information, including the possibility of fines and imprisonment for knowing violations.

Dated: \_\_\_\_\_

Signature: \_\_\_\_\_

(f) This report must be submitted to the U.S. Environmental Protection Agency, Document Processing Center, P.O. Box 2070, Rockville, MD 20852, Attention: PCB Notification. This report must be submitted by October 1, 1984 or

within 90 days of starting up processes or commencing importation of PCBs

(g) This certification process must be repeated whenever process conditions are significantly modified to make the previous certification no longer valid

(Approved by the Office of Management and Budget under control number 2070-0008)

11. Section 761.187 and OMB control number 2070-0008 are added to read as follows:

**§ 761.187 Reporting importers and by persons generating PCBs in excluded manufacturing processes.**

In addition to meeting the basic requirements of § 761.1(f) and the definition of excluded manufacturing process at § 761.3, PCB-generating manufacturing processes or importers of PCB-containing products shall be considered "excluded manufacturing processes" only when the following conditions are met:

(a) Data are reported to the EPA by the owner/operator or importer concerning the total quantity of PCBs in product from excluded manufacturing processes leaving any manufacturing site in any calendar year when such quantity exceeds 0.0025 percent of that site's rated capacity for such manufacturing processes as of October 1, 1984; or the total quantity of PCBs imported in any calendar year when such quantity exceeds 0.0025 percent of the average total quantity of such product containing PCBs imported by such importer during the years 1978, 1979, 1980, 1981 and 1982.

(b) Data are reported to the EPA by the owner/operator concerning the total quantity of inadvertently generated PCBs released to the air from excluded manufacturing processes at any manufacturing site in any calendar year when such quantity exceeds 10 pounds.

(c) Data are reported to the EPA by the owner/operator concerning the total quantity of inadvertently generated PCBs released to water from excluded manufacturing processes from any manufacturing site in any calendar year when such quantity exceeds 10 pounds.

(d) These reports must be submitted to the U.S. Environmental Protection Agency, Document Processing Center, P.O. Box 2070, Rockville, Maryland 20852, Attention: PCB Notification.

(Approved by the Office of Management and Budget under control number 2070-0008)

12. Section 761.193 and OMB control number 2070-0008 are added to read as follows:

§ 761.193 Maintenance of monitoring records by persons who import, manufacture, process, distribute in commerce, or use chemicals containing inadvertently generated PCBs.

(a) Persons who import, manufacture, process, distribute in commerce, or use chemicals containing PCBs present as a result of inadvertent generation or recycling who perform any actual monitoring of PCB concentrations must maintain records of any such monitoring for a period of three years after a process ceases operation or importing ceases, or for seven years, whichever is shorter.

(b) Monitoring records maintained pursuant to paragraph (a) of this section must contain:

- (1) The method of analysis.
- (2) The results of the analysis, including data from the Quality Assurance Plan.
- (3) Description of the sample matrix.
- (4) The name of the analyst or analysts.
- (5) The date and time of the analysis.
- (6) Numbers for the lots from which the samples are taken.


(Approved by the Office of Management and Budget under control number 2070-0008)

[FR Doc. 84-17903 Filed 7-9-84; 8:48 am]

BILLING CODE 5530-05-M

# ACTION REQUESTED

TO: Company Representatives with Operations in the Vicinity  
of Fish Sampling Locations in EPA's Bioaccumulation Study

FROM: J. J. McKeown and D. L. Borton 

DATE: June 6, 1988

RE: Results of EPA Fish Analysis for Dioxins/Furans and NCASI's  
Request for Background Information.

EPA has provided NCASI the first batch of data from their National Bioaccumulation Study. The data provides information on dioxin and furan content only. Additional analyses will be performed on fish from these locations for 66 other organic chemicals known to bioaccumulate and for which analytical methodology is available in the concentration range of interest. NCASI has requested these data from EPA and will transmit the information to you when available.

We are transmitting at this time the information received from EPA on dioxin/furan analyses. Two attachments are enclosed. The first is an NCASI summary of the findings for all locations reported to date. The second is the data sheets, as received from EPA, for the fish collected in the vicinity of your company's outfall. We have provided the legend to help you understand the codes used by EPA in reporting these data.

EPA has advised us that their protocols for QA/QC have been used to judge the acceptability of these data. NCASI is in the process of obtaining these protocols and sample computerized data so we can judge the acceptability of the data reported. We therefore respectfully request that you treat these data as preliminary until we have completed our analysis. Although these data are considered preliminary in our opinion, they are being provided because EPA has already released the information to appropriate states and EPA regional offices and to Greenpeace.

We are also releasing the data in the hopes that you will provide NCASI with information about conditions in the receiving stream and at the mill prior to the date when the fish were collected. These data will allow NCASI to be in position to evaluate if the potential bioaccumulation factors for dioxin/furan in fish can be estimated with any degree of confidence as more effluent data becomes available. The following is the information requested:

- 1) Distance in miles upstream or downstream from the mill to the location where the fish were sampled.
- 2) Other potential sources of dioxin/furan discharge in the basin above the fish collection point.

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3) Estimate of the domicile of the type of fish collected. We are looking for the range of mobility of the fish species in your stream. Please provide your answer in miles (+ or -). For example, if the sampling site is bounded by a dam or other barriers which prevent migration of the fish or the fish species captured is known to move only small distances from the point of capture, the range would be small. On the other hand, if the species is migratory by nature and is not inhibited by physical barriers, the range would be large. If you don't know the general range of the species of fish captured, please indicate range is unknown or, better yet, obtain the opinion of a local fishery biologist and let us know that opinion. We are primarily interested in the most likely estimate of the location of the fish in the 90 days prior to its collection. Attached are examples of three situations, A, B and C, relative to fish domicile and range of migration which should be helpful in explaining what we are looking for here.

4) The average river flow for three averaging periods, 30, 60, and 90 days prior to the time the fish were collected. These flows should be for two points on the stream corresponding to the upper and lower limits of the range of mobility for the fish as noted in number 3 above plus at the outfall. In other words, please report six flows. NCASI appreciates that these flows will be estimates based on mile point and extrapolation of appropriate drainage areas. We intend to average these two flows for each time period to analyze potential bioconcentration.

5) Concentration of dioxin/furan in effluent discharged from the mill if available including the dates when the data was collected. Also include the average BOD, TSS, and flow for the discharge for the same periods noted in number 4 above (30, 60, and 90 days prior to the time the fish were collected). If you have no data on dioxin/furan please note accordingly and provide the other data anyway. If you have already provided NCASI with dioxin data, please cite the appropriate correspondence; or provide it again.

6) Provide a brief description of mill operations noting any significant disruptions in operations during the three periods of interest. We are interested in shutdowns or equipment outages which would have substantially changed the effluent loading from the bleach plant or the treatability of the wastewater prior to collection of the fish. A schematic of your wastewater treatment system would be appreciated.

7) For the species of fish collected please let us know (a) if these fish are taken in large numbers at the point of collection by anglers, (b) if these fish are taken by these anglers, more or less, at the time of the year when these

fish were collected and (c) how these fish are prepared by most fisherman prior to cooking (skinned, filleted, gutted, etc.).

8) Any fishing records as to total catch of the species collected (by the local fish and game club or state fish and wildlife agency) for the stream and location involved if possible.

9) Any other information you believe will be of value in assisting NCASI in (a) its risk assessment project for dioxin discharged to receiving waters and (b) supporting information on other samples and studies which may be related (i.e. sediment analyses for chlorinated organics, fish migration studies, time of passage between mill and point of fish collection, etc.).

The enclosed data is being sent to all companies within the suspected range of mobility of the fish collected. Each company is being asked to provide all information requested. It is possible that we have missed some multiple discharge situations which we will follow-up on after we receive your response.

Please send the requested information by July 15, 1988 if possible to the following:

James J. McKeown  
NCASI  
Anderson Hall Room 001  
Medford, MA 02155  
(617) 381-3254

Please use the attached sheet to summarize the information requested. The items follow the numbering system used in this letter. Call James McKeown (617-381-3254); Dennis Borton (919-637-6873); or William Gillespie (212-532-9000) regarding questions about this request.

SUMMARY OF BACKGROUND  
INFORMATION FOR EACH FISH COLLECTED  
IN EPA'S BIOACCUMULATION STUDY

Fish: F WB Carp, SCC: DE021801

MI Saugatuck, Saugatuck

Company Name: \_\_\_\_\_

Mill Location: \_\_\_\_\_

Person Completing Report: \_\_\_\_\_

Address and Phone No.: \_\_\_\_\_

- (1) (a) Distance (river miles) from mill discharge to point of collection of fish \_\_\_\_\_.  
(b) This fish was collected (upstream or downstream) of the mill discharge \_\_\_\_\_.

- (2) (a) Other potential sources of dioxin/furan discharge (POTWs, industry) and distance upstream or downstream from fish collection point. If downstream, discharge must be within the suspected domicile of the fish collected.

\_\_\_\_\_ miles  
\_\_\_\_\_ miles

- (b) Sources of tributary flows entering stream between upstream limit of the mobility range of the fish and the collection point.

\_\_\_\_\_ miles  
\_\_\_\_\_ miles

- (c) Sources of tributary flow entering stream between point of fish collection and farthest downstream point in the domicile range for the fish collected.

\_\_\_\_\_ miles  
\_\_\_\_\_ miles

- (3) (a) Farthest point in migratory range for the fish collected in river miles from the mill discharge. If upstream, report as a negative value. \_\_\_\_\_ miles.

Is this point the location of a physical barrier to fish migration (Yes, No) \_\_\_\_\_.

- (b) Nearest point in the domicile range for the fish collected in river miles from the mill discharge. Again, if upstream report as a negative value. \_\_\_\_\_ miles.

Is this point the location of a physical barrier to fish migration (Yes, No) \_\_\_\_\_.

- (4) Prior to the time the fish was collected what was the average river flow for the periods noted at the points noted: (report in CFS please)

30 days 60 days 90 days

Outfall: \_\_\_\_\_

Nearest point in domicile range: \_\_\_\_\_

Farthest point in domicile range: \_\_\_\_\_

If tributary confluence intervenes, provide main stream flow just below the confluence for each tributary.

30 days 60 days 90 days

Trib. 1 Name: \_\_\_\_\_

Trib. 2 Name: \_\_\_\_\_

- (5) (a) Concentration of dioxin/furan in the effluent. Please attach the laboratory report showing all isomers tested. Report 2,3,7,8 - TCDD/F here and designate units.

Date: \_\_\_\_\_ 2,3,7,8-TCDD \_\_\_\_\_ 2,3,7,8-TCDF \_\_\_\_\_

Date: \_\_\_\_\_ 2,3,7,8-TCDD \_\_\_\_\_ 2,3,7,8-TCDF \_\_\_\_\_

- (b) Conventional Effluent Data: 30 days 60 days 90 days

Effluent Flow (MGD) \_\_\_\_\_

Effluent BOD (mg/l) \_\_\_\_\_

Effluent TSS (mg/l) \_\_\_\_\_

Total Treatment Efficiency(%) BOD \_\_\_\_\_

- (6) (a) Describe major interruptions in normal operations which occurred in the 90 days prior to the date when the fish was collected. Attach reports as appropriate.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- (7) (a) Is the species of fish collected one which would be eaten by humans? \_\_\_\_\_.
- (b) Is the size of the fish collected large enough to be normally eaten? \_\_\_\_\_.
- (c) What is the legal season for fishing for the species collected? \_\_\_\_\_.
- (d) What is the minimum size of fish of this species which can be legally taken? \_\_\_\_\_ inches.
- (e) Is the point of collection a popular fishing point? \_\_\_\_.
- (f) Any estimate of the numbers of fish caught here? \_\_\_\_\_ per day during the fishing season.
- (g) Within what zone (river miles from outfall) are fish of this species taken (use negative numbers to indicate miles upstream)? Closest \_\_\_\_\_ Farthest \_\_\_\_\_.
- (h) Are there other more significant fishing points on the stream? \_\_\_\_\_ within the range of the mill outfall.
- (i) What percentage of fish of this species are taken from shore, by boat or by wading at the point where this fish was collected?  
Shore \_\_\_\_\_%, Boat \_\_\_\_\_%, Wading \_\_\_\_\_%.
- (j) How is this fish normally prepared for consumption? (check which apply)  
Eaten whole as caught \_\_\_\_\_ (i.e. crab, oysters)  
Head Removed \_\_\_\_\_  
Gutted \_\_\_\_\_  
Tail Removed \_\_\_\_\_  
Skinned \_\_\_\_\_  
Not Cooked \_\_\_\_\_  
Cooked \_\_\_\_\_
- (8) (a) Please provide estimates or records of studies which show quantity of fish of this species are taken and consumed annually from below the mill. \_\_\_\_\_ lbs.
- (b) Please provide estimates or records of studies which show how many people (include family members) eat these fish. \_\_\_\_\_ people.
- (9) Please cite any appropriate documents or people, especially if a fishery biologist was involved, from which you have drawn your information and provide NCASI with appropriate documents as requested in item 9 in the letter.

Local Fishery Biologist: \_\_\_\_\_

Other Contacts: \_\_\_\_\_

SUMMARY OF BACKGROUND  
INFORMATION FOR EACH FISH COLLECTED  
IN EPA'S BIOACCUMULATION STUDY

Fish: F PF Bass, SCC: DE021802

MI Saugatuck, Saugatuck

Company Name: \_\_\_\_\_

Mill Location: \_\_\_\_\_

Person Completing Report: \_\_\_\_\_

Address and Phone No.: \_\_\_\_\_

- (1) (a) Distance (river miles) from mill discharge to point of collection of fish \_\_\_\_\_.  
(b) This fish was collected (upstream or downstream) of the mill discharge \_\_\_\_\_.  
(2) (a) Other potential sources of dioxin/furan discharge (POTWs, industry) and distance upstream or downstream from fish collection point. If downstream, discharge must be within the suspected domicile of the fish collected.

\_\_\_\_\_ miles  
\_\_\_\_\_ miles

- (b) Sources of tributary flows entering stream between upstream limit of the mobility range of the fish and the collection point.

\_\_\_\_\_ miles  
\_\_\_\_\_ miles

- (c) Sources of tributary flow entering stream between point of fish collection and farthest downstream point in the domicile range for the fish collected.

\_\_\_\_\_ miles  
\_\_\_\_\_ miles

- (3) (a) Farthest point in migratory range for the fish collected in river miles from the mill discharge. If upstream, report as a negative value. \_\_\_\_\_ miles.

Is this point the location of a physical barrier to fish migration (Yes, No) \_\_\_\_\_.

- (b) Nearest point in the domicile range for the fish collected in river miles from the mill discharge. Again, if upstream report as a negative value. \_\_\_\_\_ miles.

Is this point the location of a physical barrier to fish migration (Yes, No) \_\_\_\_\_.

- (4) Prior to the time the fish was collected what was the average river flow for the periods noted at the points noted: (report in CFS please)

30 days 60 days 90 days

Outfall: \_\_\_\_\_

Nearest point in domicile range: \_\_\_\_\_

Farthest point in domicile range: \_\_\_\_\_

If tributary confluence intervenes, provide main stream flow just below the confluence for each tributary.

30 days 60 days 90 days

Trib. 1 Name: \_\_\_\_\_

Trib. 2 Name: \_\_\_\_\_

- (5) (a) Concentration of dioxin/furan in the effluent. Please attach the laboratory report showing all isomers tested. Report 2,3,7,8 - TCDD/F here and designate units.

Date: \_\_\_\_\_ 2,3,7,8-TCDD \_\_\_\_\_ 2,3,7,8-TCDF \_\_\_\_\_

Date: \_\_\_\_\_ 2,3,7,8-TCDD \_\_\_\_\_ 2,3,7,8-TCDF \_\_\_\_\_

- (b) Conventional Effluent Data: 30 days 60 days 90 days

Effluent Flow (MGD) \_\_\_\_\_

Effluent BOD (mg/l) \_\_\_\_\_

Effluent TSS (mg/l) \_\_\_\_\_

Total Treatment Efficiency(%) BOD \_\_\_\_\_

- (6) (a) Describe major interruptions in normal operations which occurred in the 90 days prior to the date when the fish was collected. Attach reports as appropriate.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- (7) (a) Is the species of fish collected one which would be eaten by humans? \_\_\_\_\_.
- (b) Is the size of the fish collected large enough to be normally eaten? \_\_\_\_\_.
- (c) What is the legal season for fishing for the species collected? \_\_\_\_\_.
- (d) What is the minimum size of fish of this species which can be legally taken? \_\_\_\_\_ inches.
- (e) Is the point of collection a popular fishing point? \_\_\_\_\_.
- (f) Any estimate of the numbers of fish caught here? \_\_\_\_\_ per day during the fishing season.
- (g) Within what zone (river miles from outfall) are fish of this species taken (use negative numbers to indicate miles upstream)? Closest \_\_\_\_\_ Farthest \_\_\_\_\_.
- (h) Are there other more significant fishing points on the stream? \_\_\_\_\_ within the range of the mill outfall.
- (i) What percentage of fish of this species are taken from shore, by boat or by wading at the point where this fish was collected?  
Shore \_\_\_\_\_%, Boat \_\_\_\_\_%, Wading \_\_\_\_\_%.
- (j) How is this fish normally prepared for consumption? (check which apply)  
Eaten whole as caught \_\_\_\_\_ (i.e. crab, oysters)  
Head Removed \_\_\_\_\_  
Gutted \_\_\_\_\_  
Tail Removed \_\_\_\_\_  
Skinned \_\_\_\_\_  
Not Cooked \_\_\_\_\_  
Cooked \_\_\_\_\_
- (8) (a) Please provide estimates or records of studies which show quantity of fish of this species are taken and consumed annually from below the mill. \_\_\_\_\_ lbs.
- (b) Please provide estimates or records of studies which show how many people (include family members) eat these fish. \_\_\_\_\_ people.
- (9) Please cite any appropriate documents or people, especially if a fishery biologist was involved, from which you have drawn your information and provide NCASI with appropriate documents as requested in item 9 in the letter.

Local Fishery Biologist: \_\_\_\_\_

\_\_\_\_\_

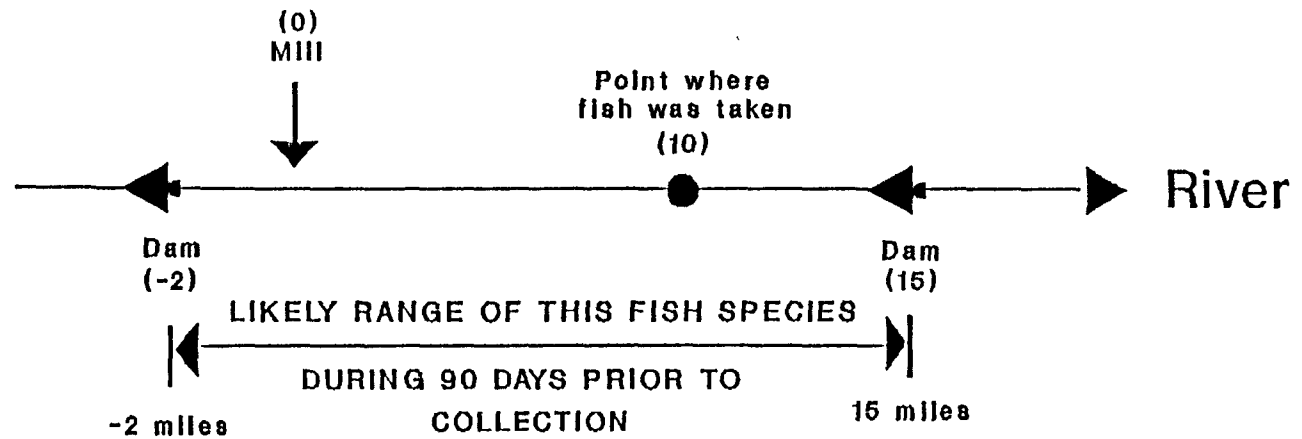
Other Contacts: \_\_\_\_\_

\_\_\_\_\_

Examples of Three Situations, A,B and C,  
Relative to Fish Domicile & Range of Migration

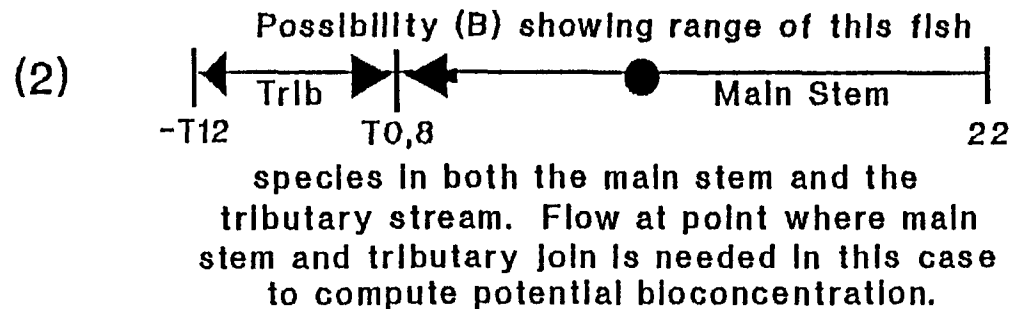
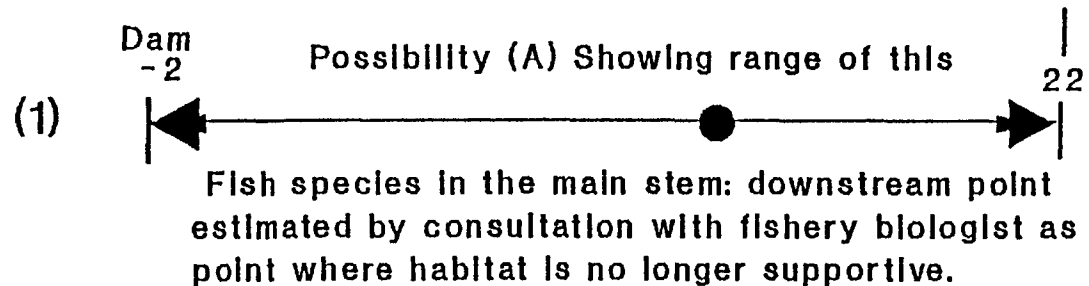
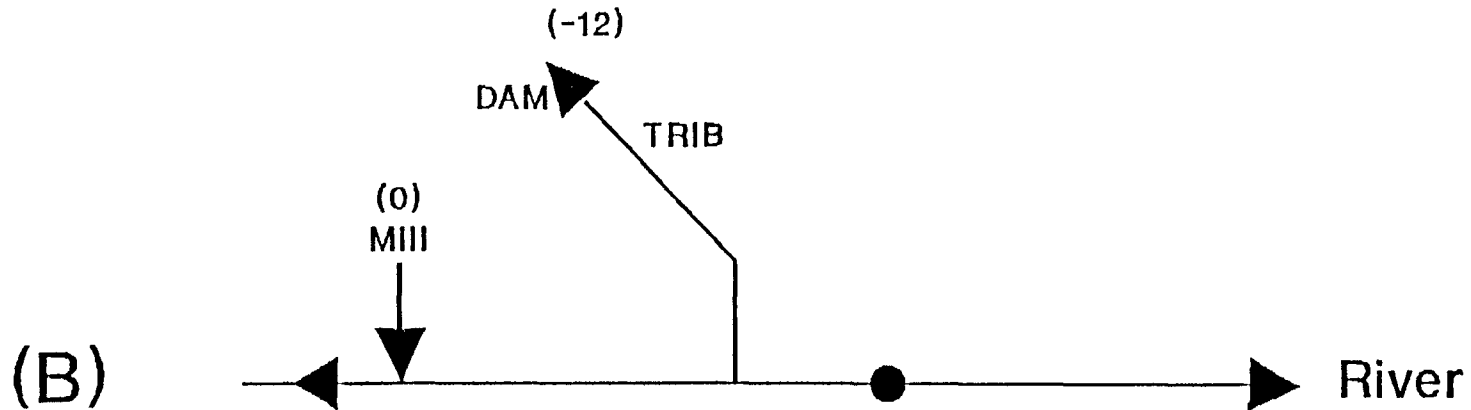
(Numbers in parenthesis represent river  
mile points relative to mill discharge)

(A)



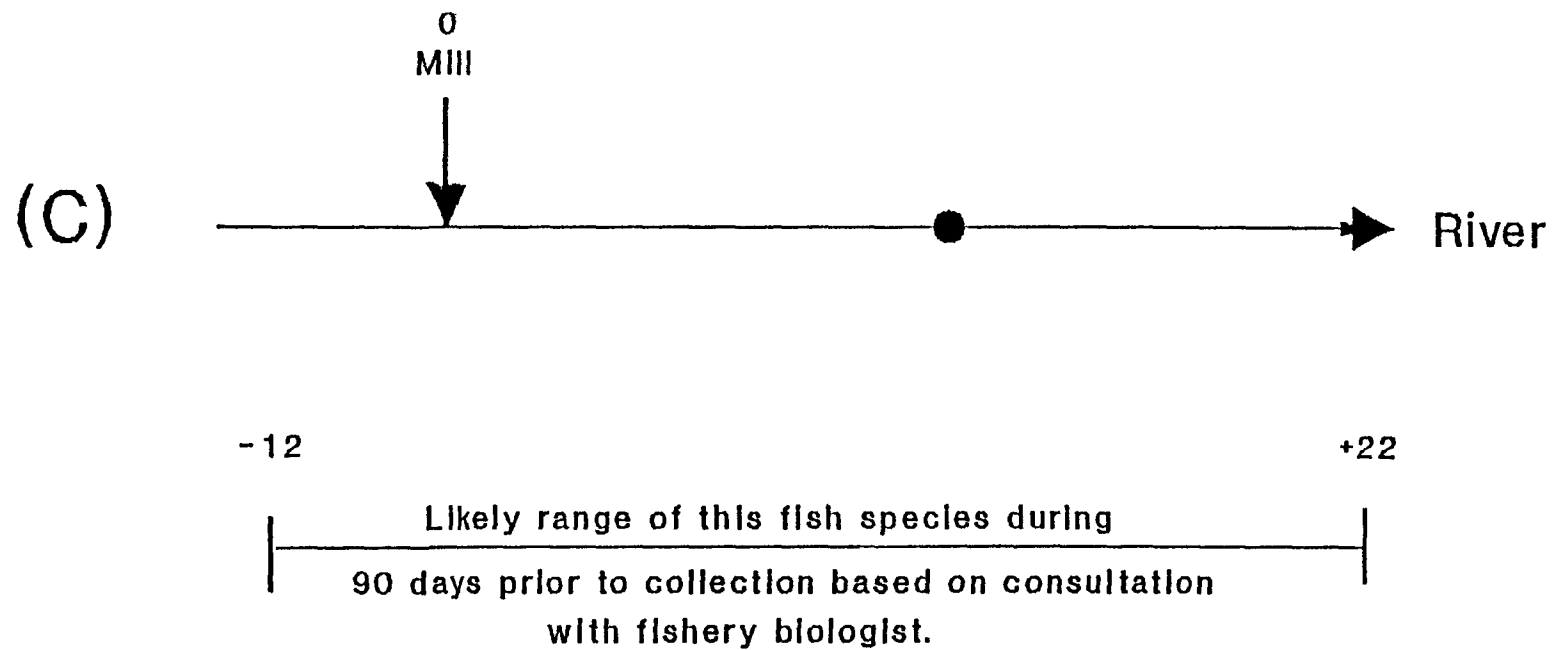
# **Examples of Three Situations, A,B and C, Relative to Fish Domicile & Range of Migration**

(Numbers in parentheses represent river mile points relative to mill discharge)



Example of Three Situations, A,B and C,  
Relative to Fish Domicile & Range of Migration

(Numbers in parenthesis represent river mile points relative to mill discharge)





# LEGEND FOR EPA'S BIOACCUMULATIVE POLLUTANT STUDY CODES

I1 = 2,3,7,8 - TCDF  
I2 = 2,3,6,7 - TCDF  
I3 = 3,4,6,7 - TCDF  
I4 = 2,3,7,8 - TCDD  
I5 = 1,2,3,7,8 - PeCDF  
I6 = 2,3,4,7,8 - PeCDF  
I7 = 2,3,4,6,7 - PeCDF  
I8 = 1,2,3,7,8 - PeCDD  
I9 = 1,2,3,4,6,7 - HxCDF/1,2,3,4,7,8 - HxCDF  
I10 = 1,2,3,6,7,8 - HxCDF  
I11 = 1,2,3,7,8,9 - HxCDF  
I12 = 2,3,4,6,7,8 - HxCDF  
I13 = 1,2,3,4,7,8 - HxCDD  
I14 = 1,2,3,6,7,8 - HxCDD  
I15 = 1,2,3,7,8,9 - HxCDD  
I16 = 1,2,3,4,6,7,8 - HpCDF  
I17 = 1,2,3,4,7,8,9 - HpCDF  
I18 = 1,2,3,4,6,7,8 - HpCDD

# = Indication of Diphenyl Ether interference at this isomer.  
F = Fillet  
L = Lab  
M = Mollusk  
WB = Whole Body  
PF = Predator Fillet  
ND = Non Detect  
( ) = Detection Limit

Micropogon Undula = Atlantic Croker  
Micropterus Salmodies = Large Mouth Bass  
Ictiobus Bubalus = Big Mouth Buffalo Fish

**SPILL PREVENTION PROGRAM**

02

Pollution Incident Prevention Plan

for Waldorf Corporation

177 Angel Street Battle Creek, MI

Day phone 616-936-5511

Power Plant phone for nights 616-963-5517

Parent Corporation: Waldorf Corporation

Wabash Avenue, St. Paul, MN

612-641-4938

Persons Responsible at the facility for the spill prevention  
and control are:

Mark Shapton, Plant Engineer

Home phone 962-5777

24-hour Pager Phone 966-7201

Don Opala, Power Manager

Home Phone 962-9618

Pager No. 966-7217

Paul Stofer, Assistant Technical Supt.

Home Phone 1-375-4896

Pager No. 966-7255

The facility at 177 Angell Street is a primary manufacturer of recycled, clay coated box board. The facility brings in waste paper, pulps the waste paper with water, cleans it, reforms it on a fourdrinier paper machine, dries with steam, coated with a water based clay coating, and delivers the finished product for the production of boxes.

The facility uses A&B Industrial Services, Inc., for their primary spill recovery unit.

The Watts line number is 1-800-632-4176.

The normal number is 616-375-9595.

## ALL POWER PLANT PERSONNEL

Additional responsibilities must be added to our daily check up rounds to comply with new Federal and State regulations. We must establish an inspection of our million and both forty thousand gallon supply tanks. We must include all oil and chemicals stored in barrels and containers.

To implement this program, we will draft up a check off list with all the necessary equipment and points of safety that must be documented.

The Second Engineers will perform these inspections on their daily rounds.

There will be signs made on all chemicals of what their content is and how to deal with each.

Tank levels will be recorded from gauge readings as well as visual inspection.

There will be instructions posted in the Power Plant office as to what the procedure will be in case of any spills or emergencies. To insure quick response to any situation, an additional radio will be purchased for better communication with engineer on duty.

As most of this work is presently being done there will be very little effort in following up with documentation and implementing this program.

Anyone wishing to talk to me about why we are doing this, or have questions concerning this, I will be glad to talk to him/her.

Don Opala

**POLLUTION INCIDENT PREVENTION PROGRAM  
IN REGARDS TO ANY OIL SPILLS**

Following is a procedure to contain and make safe any major oil leak or spill.

1. Notify engineer on duty in Power Plant.
2. Engineer will determine the severity of the spill and follow with the appropriate action.
3. Call A&B Industrial Solvents, on duty 24 hours a day to come immediately for proper clean up.
4. He is to call Mark Shapton, Don Opala, and Paul Stofer to assist in any other action that may be needed to secure the spill.
5. All names and numbers are listed in office Power Plant.

A&B Industrial Solvents 1-616-375-9595  
Watts line 1-800-632-4176

The following emergency numbers are listed:

Michigan Department of Natural Resources Pollution  
Emergency Alerting System

Phone: 1-800-292-4706  
or: 517-373-7660

District #2 Engineer Nate Frish

Phone: 517-788-9598

Calhoun County Health Department  
Steven Noble

Phone: 616-966-1241

Grand Rapids-Resource Recovery Division (landfill)  
Mr. Hartman

Phone: 616-456-5071

Office of Hazardous Waste Management

Phone: 517-373-2730

Office of Toxic Materials

Phone: 517-374-9640

United States Environmental Protection Agency  
Grosse Ile Office

Phone: 313-676-6500

Battle Creek Wastewater Treatment Plant

Phone: 616-966-3513

## Angel Street

The following are plans for pollution controls:

1. Our one million gallon #6 fuel oil tank with our six foot dyke surrounding it. If the tank were to burst the dyke would contain it. Cleaning up of such a spill would be done by an industrial waste hauling service. Fig. 1
2. The unloading area for fuel oil trucks is now on a level dirt drive, we suggest that this area be sloped, to keep the spillage in a contained area. Cleaning of such a spill would be done by an industrial waste hauling service. Fig. 2
3. Lubricating oils near machine oil tank. Install small dyke around the lubricating oil barrels. Fig. 3
4. Dryer bearing oil - Relocate drainage ditch, and provide a dyked area to surround tanks. Fig. 4
5. Paper additive chemicals to be stored in the west end of the conveyor room. Fig. 5
6. Save alls - water clarification and recycling system. Fig. 6
7. Clay slurry storage. Area fully dyked clean up would be by waste hauler or to city system.
8. Bulk polymer storage. Leakage from a mishap on the polymer would be collected in the polymer room and sent to the city treatment plant, via the sewer system.



DATE

PLANT

OF

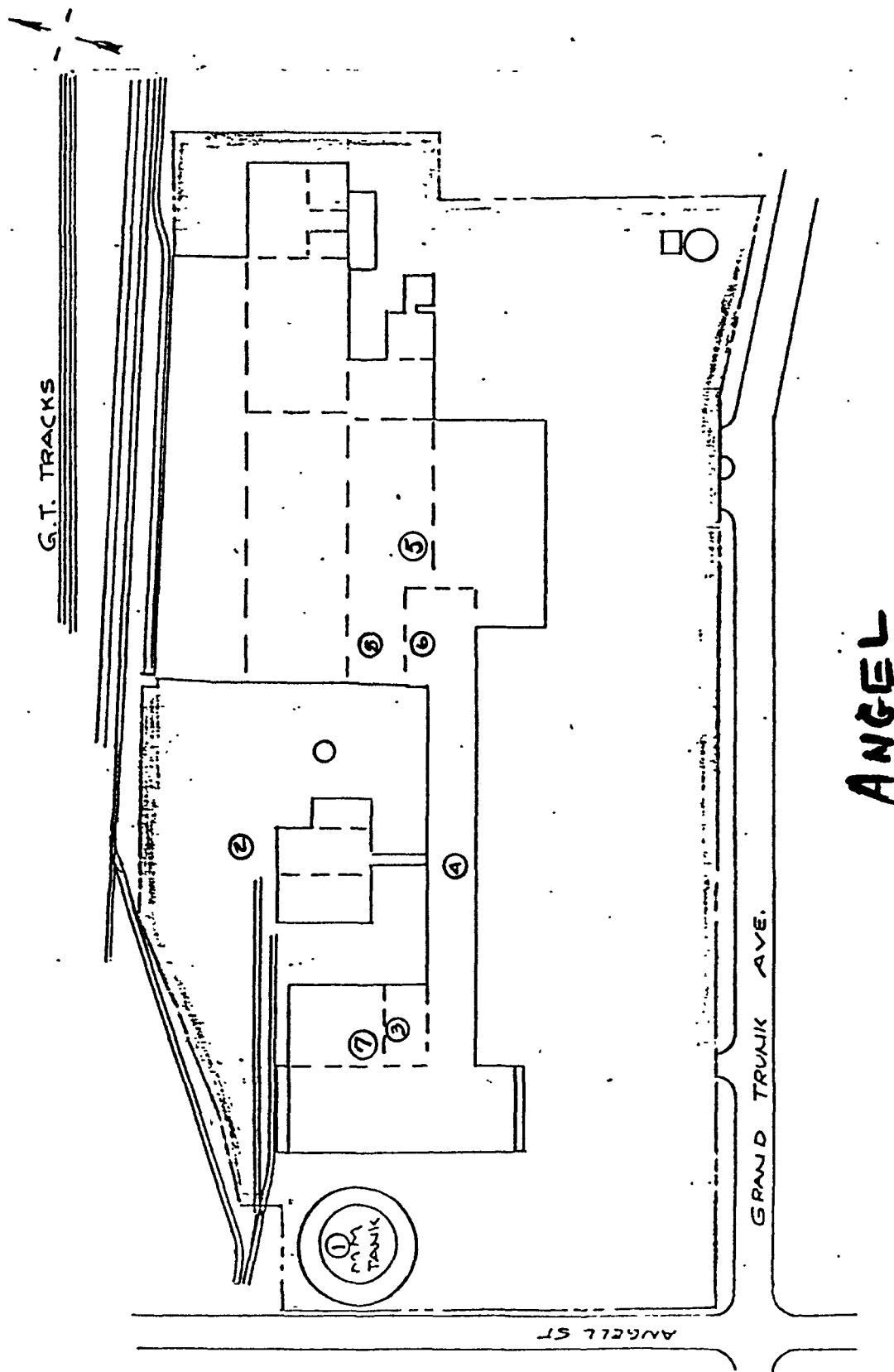
DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER No.

SUBJECT

CALCULATIONS BY



## #6 Fuel Oil

In compliance with your P.I.P.P. check list the following information is given under section III:

- A. Million gallon
- B. Supplied on drawing
- C. Steel
- D. None
- E. Relief valves at pump unloading station
- F. Shell man hole, roof man hole, vent
- G. Rust resistant exterior paint
- H. Fuel oil pumped from tank cars at 110 GPM to tank
- I. Sealed steel tank
- J. Level earth footing, dyked area

FIG. 1

**ADMINISTRATIVE**

**E**

[illegible]

20 MIN.

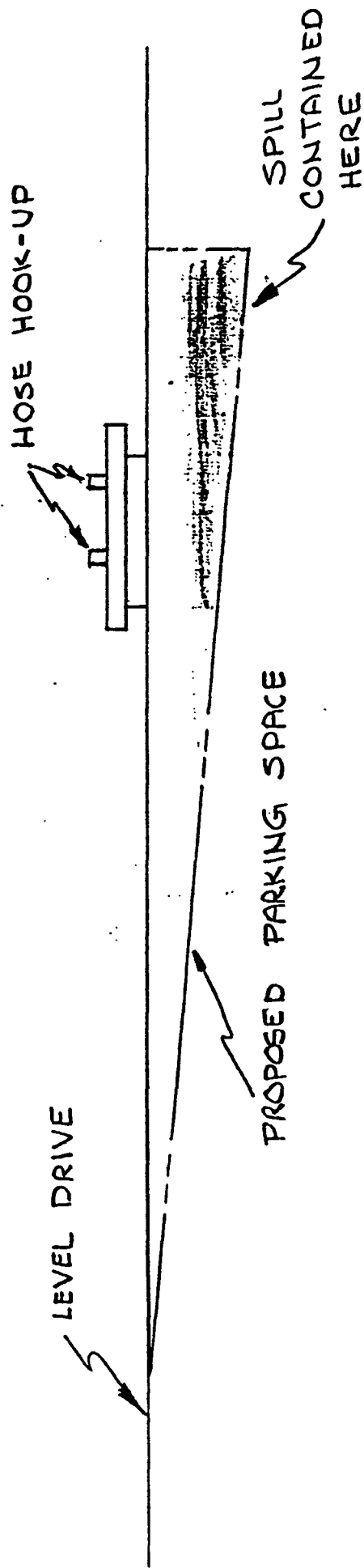


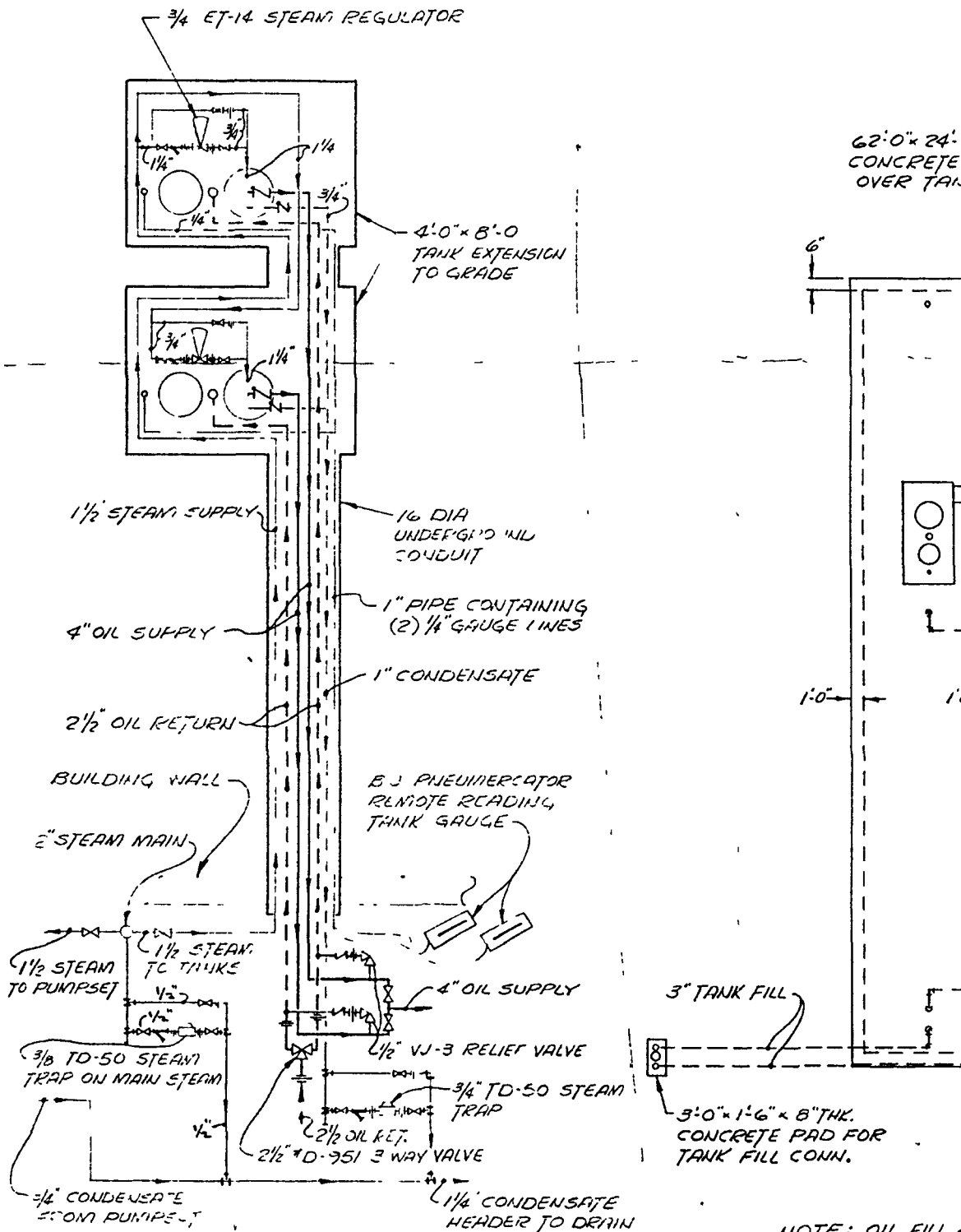
FIG. 2

#### #6 Fuel Oil Storage

- A. Two 40 Thousand Gallon Underground #6 Fuel Oil Tanks
- B. Drawing attached
- C. Steel
- D. Employee required to stand by during filling
- E. Over flow pipe - see drawings
- F. Top, pump to Power Plant on to million gallon tank
- G. Tar coating
- H. From tanker, employee must stand by  
Drain off to boiler semi-automatic
- I. See drawing
- J. See drawings

11'-6"

ELEVATION  
SCALE 1/4" = 1'-0"



SCHEMATIC PIPING DIAGRAM  
FROM BUILDING TO OIL TANKS

NOTE: OIL FILL &  
PIPING TO  
BLACK SEAM  
WITH ONE C  
BITUMASTI



MIDWESCO ENTERPRISE INC.

1650 N ELSTON AVE.

CHICAGO, ILLINOIS 60622

TEL 312 - 489-5800

ARCHITECT
ENGINEER
HEATING CONT.

16" DIA. CONDUIT CONTAINING

- 4" OIL SUPPLY
- 2 1/2" OIL RETURN
- 1 1/2" STEAM SUPPLY
- 1 1/4" STEAM SUPPLY
- 3/4" CONDENSATE
- 1/4" GAUGE LINE

CONCRETE SLAB TO  
BE REINFORCED WITH  
ROD ON 12" CENTERS  
BOT. WAY-S.

CONCRETE TO BE PITCHED  
DOWN 1/4" AWAY IN ALL  
DIRECTIONS FROM RAIL TRACK  
FINISHES IN SLAB

GRADE ELEV. 93'-9"

FLOOR ELEV. 96'-0"

- 16" DIA. CONDUIT CONTAINING
- (2) 4" OIL SUPPLY
  - (2) 2 1/2" OIL RETURN
  - (1) 1 1/2" STEAM SUPPLY
  - (1) 1" CONDENSATE
  - (1) 1" GAUGE

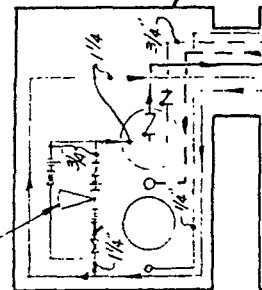
10'-0" x 2'-0" x 2'-0" THK  
CONCRETE SLAB EN-  
CASING CONDUIT &  
SUPPORTING RR TRACKS

(2) 40,000 GAL. OIL STORAGE TANK  
10'-6" DIA. x 61'-0" LONG.

11'-6"

ELEVATION  
SCALE 1/4" = 1'-0"

3/4" ET-14 STEAM REGULATOR



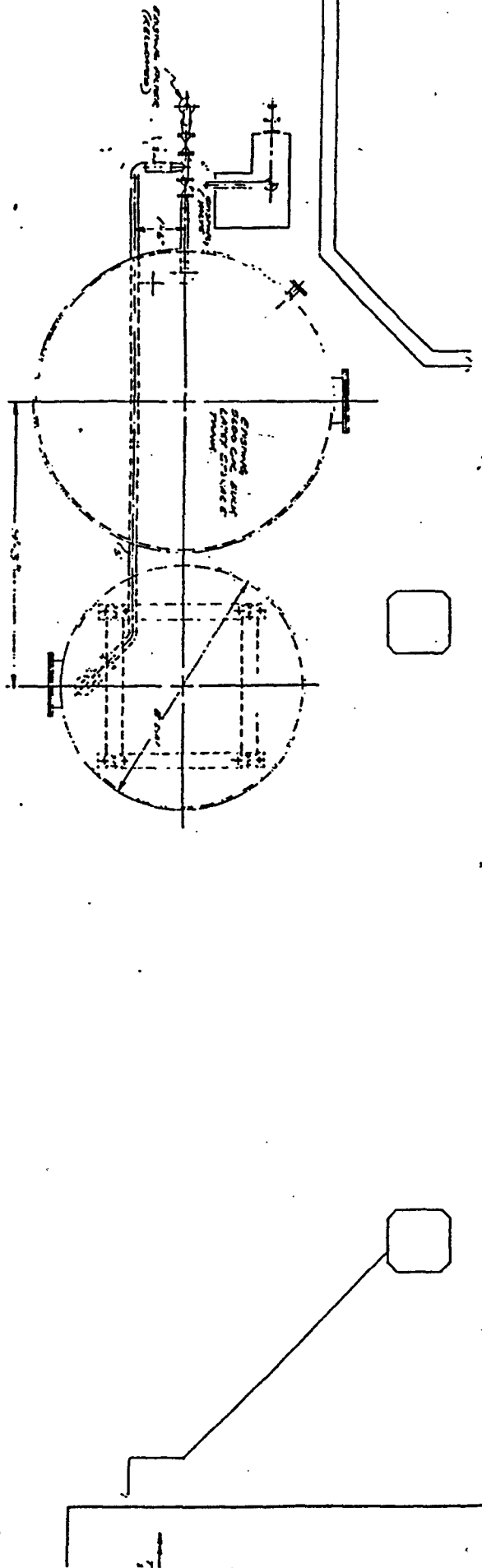
4'-0" x 8'-0"  
TANK EXTENSION  
TO GROUND

62'-0" x 24'-0" x 1'-0" THK  
CONCRETE SLAB  
OVER TANKS

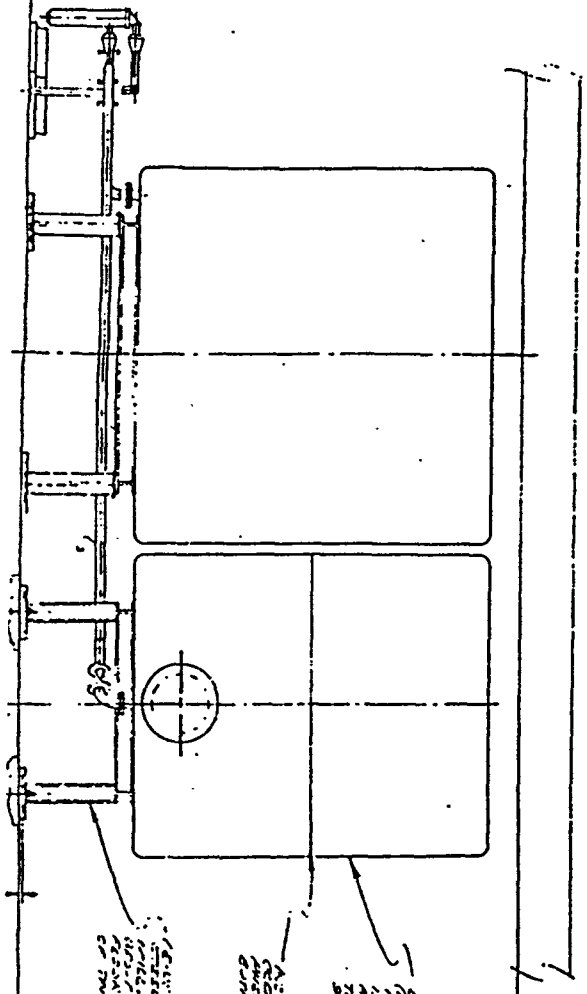
3" OIL STICK

#### Latex Storage

- A. Two latex tanks 5,600 gallon and 4,000 gallon tanks
- B. See drawing
- C. Steel
- D. None, employee present during filling and unloading
- E. Over flow pipes
- F. Man holes
- G. Coated
- H. See drawings
- I. Steel
- J. Above grade



PLAN VIEW



TO LIFT  
UP

CASH  
EIGHT

Fig. 4

Dryer Bearing Oils

In compliance with your P.I.P.P. check list the following information is given under section FII:

- A. 8x19x6 and 8x17x6, volume of approximately 10,000 gallons
- B. Supplied in drawing
- C. Steel
- D. High and low level alarms
- E. None
- F. Maintenance lids on top of tanks
- G. Rust resistant exterior paint
- H. Oil hand pumped into and out of tanks
- I. Steel
- J. Level ground floor



Fig. 6

Save Alls

Waste Treatment

In compliance with your P.I.P.P. check list the following information is given under section III:

- A. Supplied in drawing
- B. Supplied in drawing
- C. Tile-plated concrete
- D. None
- E. None
- F. Drain location on drawing
- G. None
- H. Filling-water pumped from machine filler pit.  
Draw off-running save alls, white water pumped out and reused, reclaimed stock pumped back into system, clarified water pumped to sewer.
- I. None
- J. Level ground floor

FIG 6

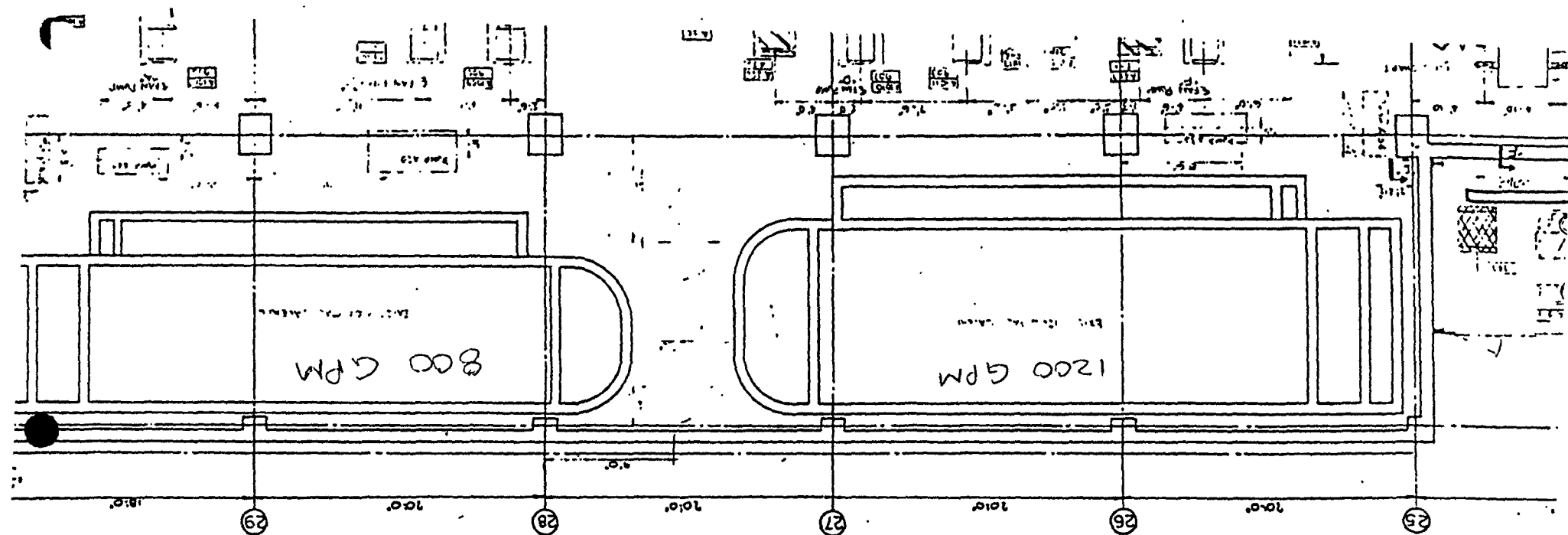


Fig. 5

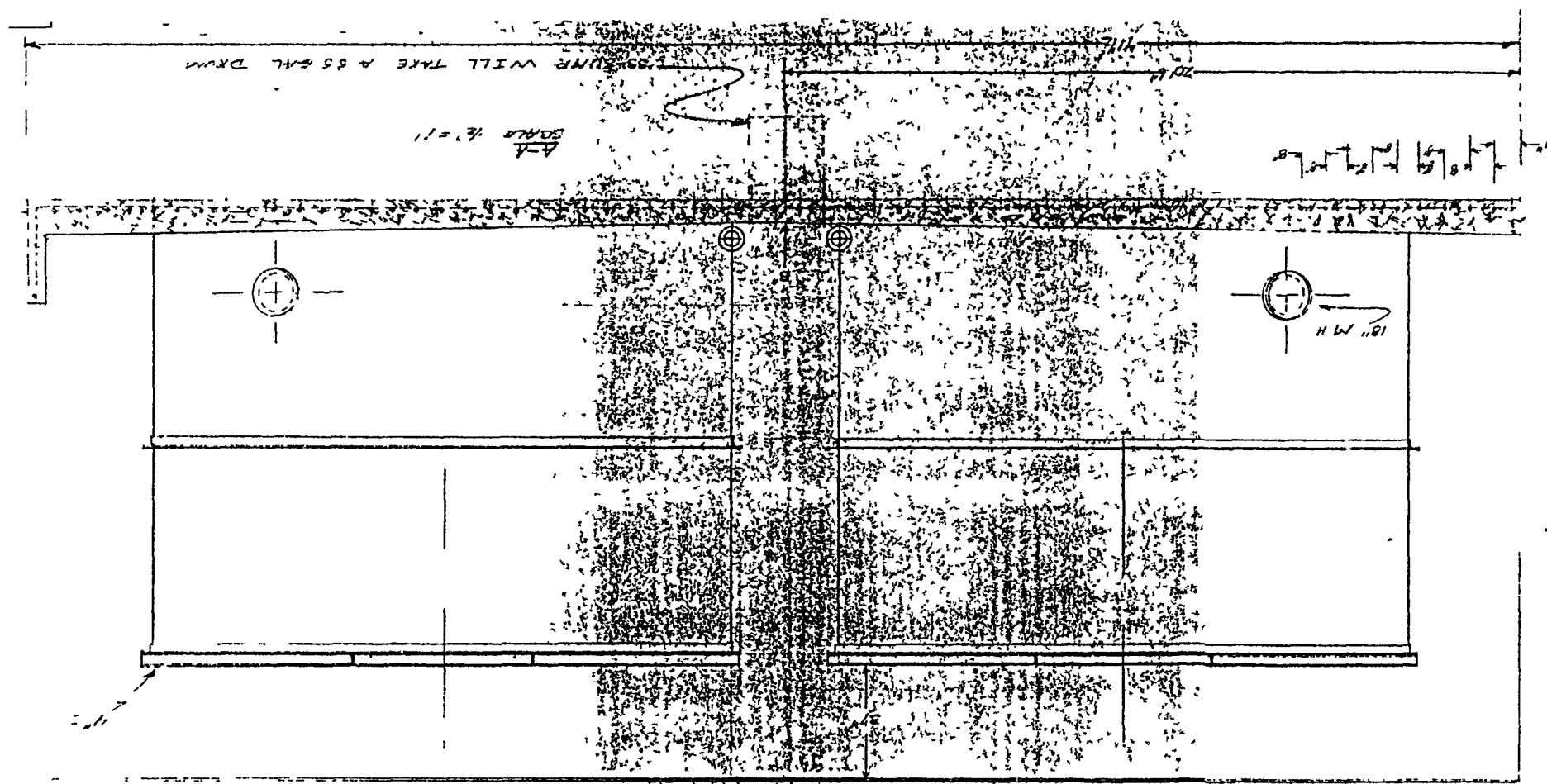
General Storage

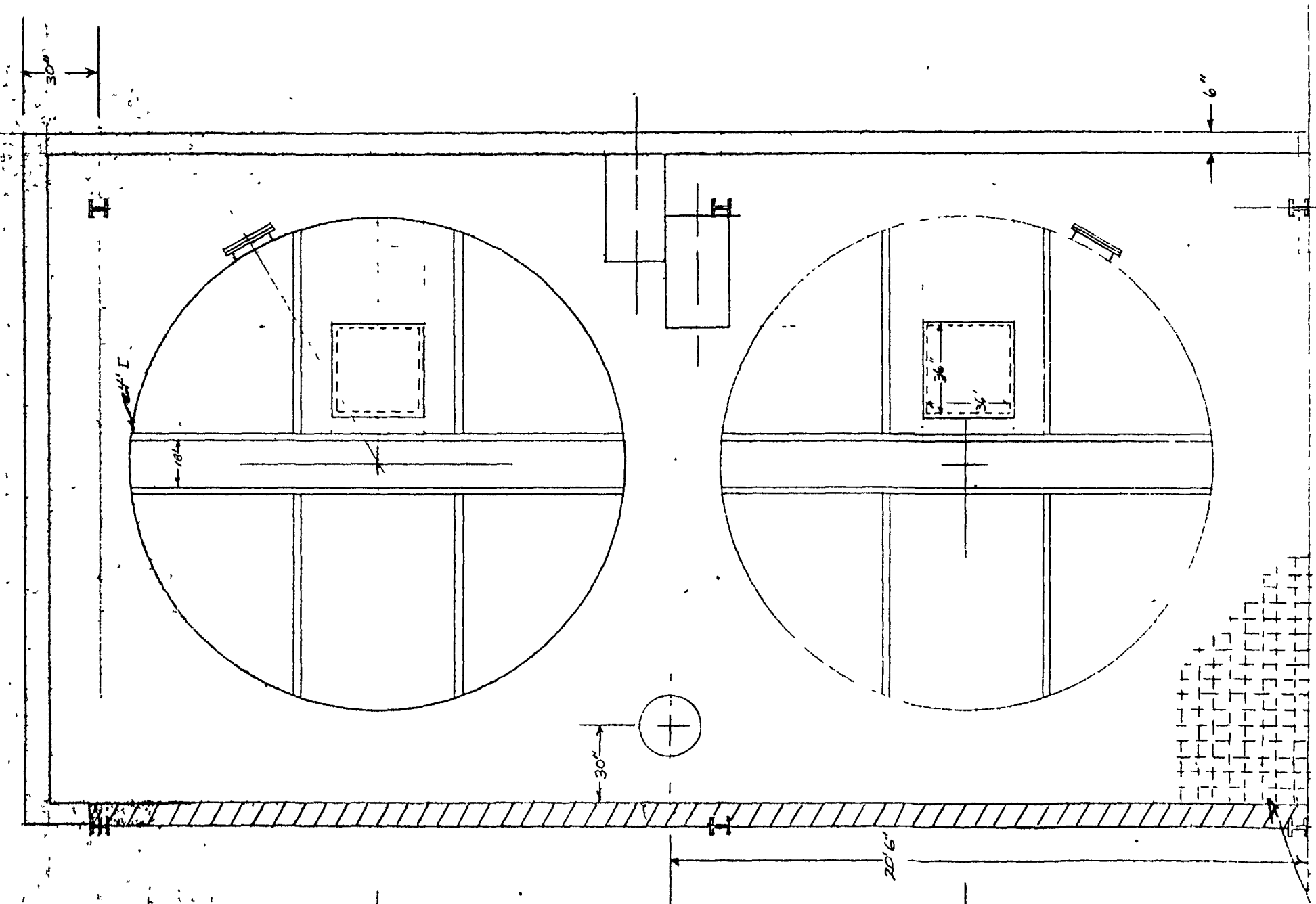
- A. Storage of paper chemicals in bag and 55 gallon drum
- B. Site - this is an area that material used in the process are stored. The area was chosen for several reasons, one of which is that it has no drain.  
Clean up is manual.
- C. Steel, fiber, and pallized material
- D. Visual employee in area at all times
- E. None
- F. No drains in area
- G. High turn over
- H. Does not apply
- I. Open to building roof
- J. Ground elevation

Clay Slurry

Fig. 7

- 7A. Storage of water base clay slurry. Two tank 36,000  
gallon total
- B. See drawing attached
- C. Stainless steel
- D. None
- E. Total dyked, relief on top
- F. Bottom outlet and man hole
- G. None
- H. Employee manually controls unloading
- I. Stainless steel
- J. On grade

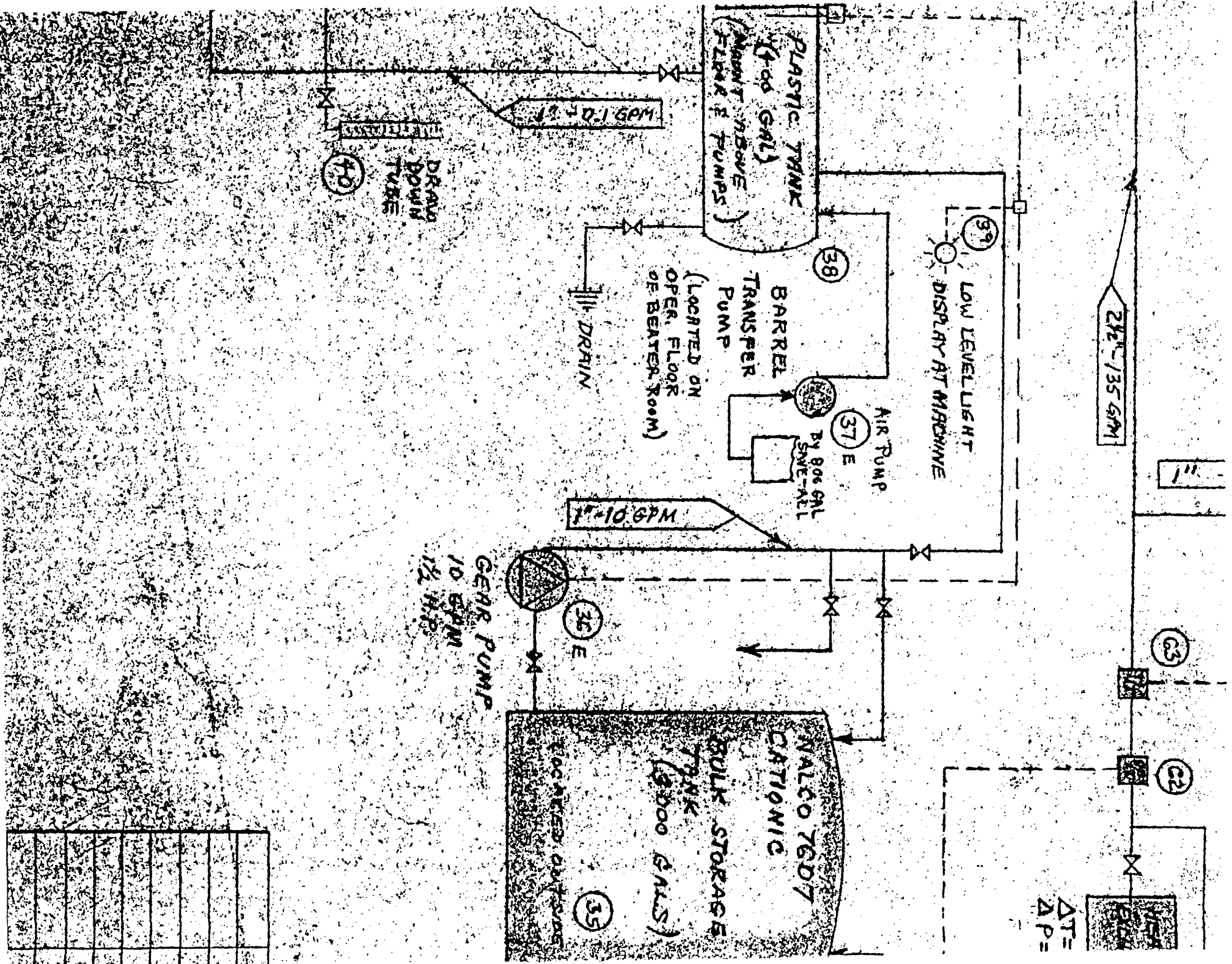




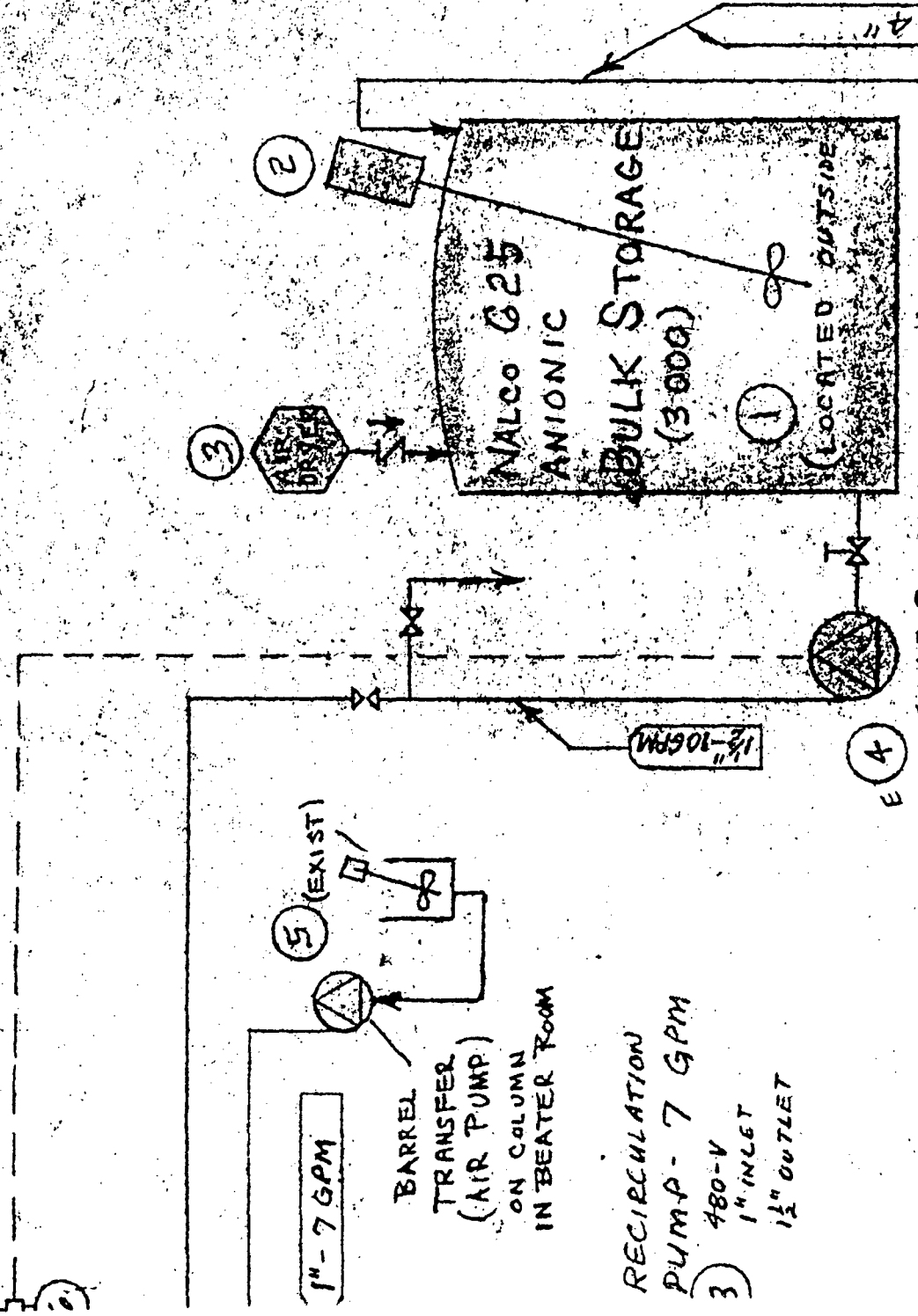
## Bulk Polymer Storage

Fig. 8

- A. Two tanks, 6,000 gallon total
- B. See drawings
- C. FRP
- D. Electrical alarm
- E. City sewer system to remove
- F. Bottom outlet, and man hole
- G. FRP
- H. Assist machine tender at location during filling,  
during drain off, system semi-automatic, lights at  
machine tender both indicate action
- I. FRP
- J. On grade



LOW LEVEL LIGHT  
DISPLAY AT MACHINE



FILL LINE  
END TO BE  
SECURED WITH  
A LOCK. TECH.  
DEPT. TO HAVE  
KEY

GEAR PUMP  
10 GPM  
1 1/2 HP  
NGS JOC

RECIRCULATION  
PUMP - 7 GPM  
480-V  
1" INLET  
1 1/2" OUTLET

BARREL  
TRANSFER  
(AIR PUMP)  
ON COLUMN  
IN BEATER ROOM

Angel Street Mill: Please refer to Fig. 8 (attached)

A. Substation #1 contains the following transformer:

General Electric 750 KVA  
Serial Number 8113528  
Containing 380 gallons of Pyranol  
The transformer is contained in a curbed area.

B. Substation #2 contains the following transformers:

1. Westinghouse 1000 KVA  
Serial Number 7026594  
Containing 240 gallons of Interteen
2. General Electric 1000 KVA  
Serial Number 8113530  
Containing 434 gallons of Pyranol
3. General Electric 300 KVA  
Serial Number 8037218  
Containing 209 gallons of Pyranol
4. General Electric 1000 KVA  
Serial Number 8113527  
Containing 434 gallons of Pyranol

The area surrounding these transformers is caged  
and curbed.

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER No.

SUBJECT

CALCULATIONS BY

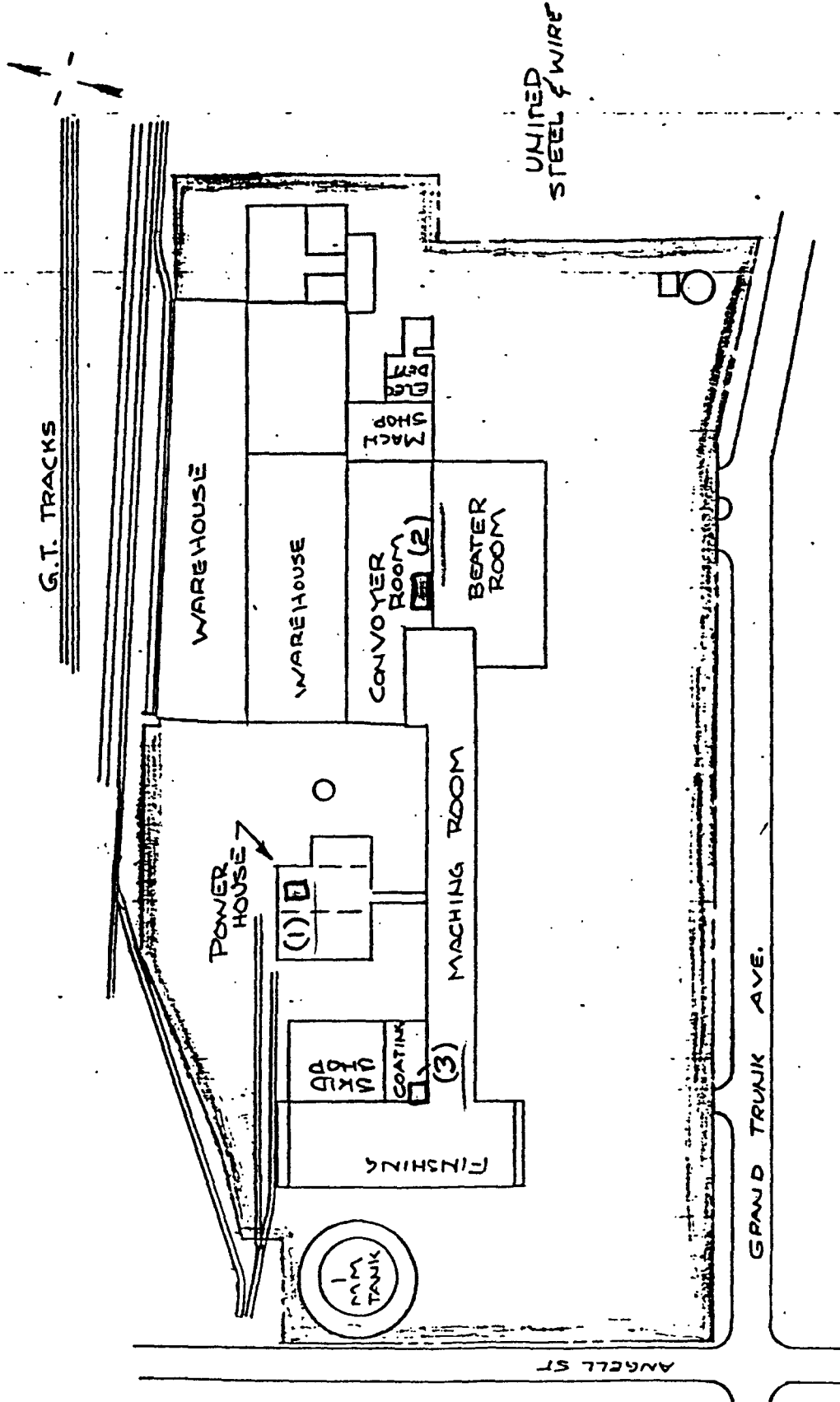


FIG. VII  
PLAN VIEW OF  
PCB SUBSTATION  
LOCATIONS  
ANGEL MILL

C. On the floor directly above substation #2 is a series of approximately twelve high voltage disconnects. They contain between five and ten gallons of transformer oil each. The area is curbed.

D. Substation #3 contains the following transformers:

1. General Electric 750 KVA  
Serial Number 8113529  
Containing 380 gallons of Pyranol
2. General Electric 200 KVA  
Serial Number 8037219  
Containing 115 gallons of Pyranol

The substation is caged and curbed.

E. A copy of the PCB label used on the above equipment is included along with the procedure for PCB clean-up.

For disposal contact:

U.S. EPA Office of Toxic Substances  
Phone: 1-800-424-9065

or:

Michigan DNR Office of Hazardous Waste Management  
Phone: 517-373-2730

F. The following sites are available for PCB disposal:

Rollins  
Deer Park, Texas  
Open March 4, 1981 for liquid PCB incineration  
Phone: 713-479-60001

or:

Ensco  
Eldorado, Arkansas  
Open March, 1981 for liquid and solid disposal  
Phone: 501-863-7173

## Security

Plant manned from 7 p.m. to 7 a.m. Their charge is to make routine rounds of perimeter to insure unauthorized personnel are not on the grounds. To detect fire, water, or other incidents such as spills that could cause a loss to the location.



To  
Michael D. Minger/Battle Creek

Date  
January 3, 1990

From  
Irma Warner/St. Paul Mill

Subject:  
**PCB ANALYSES  
BATTLE CREEK BOARD**

Analyzed 1-2-90

89-9-30-2 0.0319 ppm

89-10-10-3 0.2150 ppm

Analyzed 1-3-90

89-12-19-1 0.0488 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
George Seiter



To  
Michael D. Minger/Battle Creek

Date  
April 11, 1989

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 4/7/89

Analyzed 4/10/89

89-1-8-3                      0.0913 ppm

89-1-27-1                    0.1583 ppm

Analyzed 4/11/89

89-3-20-2                    0.0275 ppm

89-3-30-1                    0.0156 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz



To	Date
Michael D. Minger/Battle Creek	January 3, 1989
From	Subject
Jeff Martens - Brian Walukiewicz/St. Paul Mill	PCB Analyses Battle Creek Board

12/15/88	88-12-15-1	0.8268 ppm
11/25/88	88-11-25-2	0.2325 ppm
9/29/88	88- 9-29-2	0.4049 ppm
9/12/88	88- 9-12-3	0.0743 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Irma Warner

sent to  
L. Chalabala  
1/9/89



To  
Michael D. Minger/Battle Creek  
  
From  
Irma Warner

Date  
September 8, 1988  
  
Subject  
**PCB Analyses  
Battle Creek Board**

Received 9/7/88

Analyzed 9/8/88

6/28/88  
8/1/88  
8/3/88

88-6-28-2	0.0163 ppm
88-8-1-1	0.0305 ppm
88-8-30-3	0.0282 ppm

Analyses performed using the FDA method.

yd  
cc: Gary Kaziukewicz

Sent to  
Kellaggs  
9/12/88

Sent to Kellossy 4/26/88



To  
Michael D. Minger/Battle Creek

Date  
April 19, 1988

From  
Steve Carlstrom/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 4/13/88

Analyzed 4/14/88

2/22/88<sup>2</sup> 88-2-22-3

0.0118 ppm

3/1/88<sup>2</sup> 88-3-1 -2

0.5675 ppm

Analyzed 4/15/88

3/1/88<sup>2</sup> 88-3-16-3

0.0224 ppm

4/1/88<sup>2</sup> 88-4-7 -1

0.0503 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Irma Warner



To:  
Michael D. Minger/Battle Creek

Date February 8, 1988

From:  
Irma Warner/St. Paul Mill

Subject:  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 2-3-88

Analyzed 2-5-88

87-12-11-2 0.3531 ppm

87-12-27-3 0.2176 ppm

9/13/88 Analyzed 2-8-88

88-1-13-1 0.1471 ppm

1/29/88 88-1-29-2 0.0257 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz

sent to  
Kellogg's  
2/25/88



To:  
Michael D. Minger/Battle Creek

Date:  
December 7, 1987

From:  
Irma Warner/St. Paul Mill

Subject:  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 12/2/87

Analyzed 12/4/87

87-9-29-1 0.0850 ppm

87-10-12-2 0.0678 ppm

Analyzed 12/7/87

87-10-25-3 0.0266 ppm

87-11-29-2 0.1569 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*Sent to  
Kellogg's  
12/15/87*



To:  
Michael D. Minger/Battle Creek

Date:  
September 30, 1987

From:  
Irma Warner/St. Paul Mill

Subject:  
PCB ANALYSES  
BATTLE CREEK BOARD

Analyzed September 29, 1987

87-7-25-3-2	0.0742ppm
87-8- 6-3-3	0.1678ppm
87-9- 8-3-1	0.1350ppm
87-9-18-3-2	0.0431ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*sent to Kellogg's  
10/2/87*



To Michael D. Minger  
Battle Creek

Date July 17, 1987

From Irma Warner - St. Paul *Iw*

Subject PCB ANALYSES - BATTLE  
CREEK BOARD

Received July 13, 1987

Analyzed July 14, 1987

87-5-15-3-1	0.4047 ppm
87-5-27-3-2	0.0988 ppm

Analyzed July 15, 1987

87-6-13-3-3	0.1048 ppm
86-6-22-3-1	0.4219 ppm

Analyzed July 16, 1987

87-7-8-3-2	0.0438 ppm
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Analyses performed using the FDA approved method.

IW/lkb

cc: Gary Kaziukewicz  
Larry Harris



To  
Michael D. Minger/Battle Creek

Date  
May 8, 1987

From  
Irma Warner/St. Paul Mill

Subject  
**PCB ANALYSES**  
**BATTLE CREEK BOARD**

Received 5/6/87

Analyzed 5/7/87

87-2-22-3-1 0.0462 ppm

87-3-19-3-2 0.3607 ppm

Analyzed 5/8/87

87-4-5-3-3 0.0908 ppm

87-4-30-3-2 0.1542 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

Handwritten signature and date: 5/13/87



To:  
Michael D. Minger/Battle Creek

Date:  
February 25, 1987

From:  
Irma Warner/St. Paul Mill

Subject:  
PCB ANALYSES  
BATTLE CREEK BOARD

*SW*

Received 2-20-87

Analyzed 2-23-87

86-12-18-3-1

0.2573 ppm

Analyzed 2-24-87

87-1-3-3-2

0.2241 ppm

87-1-25-3-3

0.1032 ppm

87-2-14-3-2

0.1889 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*Sent to Kellogg's  
3/9/87*



To  
Michael D. Minger/Battle Creek

Date  
December 22, 1986

From  
Irma Warner/St. Paul Mill *Iw*

Subject  
**PCB ANALYSES  
BATTLE CREEK BOARD**

Received 12/18/86

Analyzed 12/19/86

<i>12/26/86</i>	86-10-26-3-2	0.1628 ppm
<i>1/3/86</i>	86-11-3-3-3	0.2004 ppm

Analyzed 12/20/86

<i>1/19/86</i>	86-11-19-3-1	0.1081 ppm
<i>1/3/86</i>	86-12-3-3-2	0.2505 ppm

Analyzed 12/21/86

<i>1/13/86</i>	86-12-13-3-3	0.2511 ppm
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Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*sent to Kellogg's  
1/4/87*



To:  
Michael D. Minger/Battle Creek

Date:  
October 22, 1986

From:  
Irma Warner/St. Paul Mill

Subject:  
PCB ANALYSES  
BATTLE CREEK BOARD

*Jim*

Received 10/20/86

Analyzed 10/21/86

<i>2/86 1<sup>st</sup></i>	86-9-12-3-1	0.0438 ppm
<i>23/86 2<sup>nd</sup></i>	86-9-23-3-2	0.1186 ppm

Analyzed 10/22/86

<i>2/6/86 3<sup>rd</sup></i>	86-10-6-3-3	0.1552 ppm
<i>1/4/86 1<sup>st</sup></i>	86-10-14-3-1	0.2877 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*Sent to  
Kellogg's 10/27/86*



To  
Michael D. Minger/Battle Creek

Date  
8/12/86

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

*per Gary Kaziukewicz*

Received 8/11/86

Analyzed 8/11/86

86-7-17-3-2                      0.0450 ppm

86-7-29-3-3                      0.0455 ppm

86-8-5-3-2                      0.0898 ppm

Analyzed 8/12/86

86-7-22-3-1                      0.1342 ppm

Analyses performed using the FDA approved method.

th  
cc: Gary Kaziukewicz  
Larry Harris

*Sent to Kelli  
8/14/86*



To  
Michael D. Minger/Battle Creek

Date  
July 7, 1986

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 7/1/86

Analyzed 7/2/86

86-5-23-3-2 0.0296 ppm

86-5-29-3-3 0.0455 ppm

Analyzed 7/3/86

86-6-9-3-1 0.0446 ppm

86-6-21-3-2 0.0643 ppm

86-6-24-3-3 0.0392 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*Sent to Kelpaco  
2/14/86*



To  
Michael D. Minger/Battle Creek

Date  
May 23, 1986

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 5/21/86

Analyzed 5/22/86

86-4-2-3-3	0.0987 ppm
86-4-13-3-2	0.2247 ppm
86-4-26-3-2	0.0348 ppm

Analyzed 5/23/86

86-5-9-3-1	0.0346 ppm
86-5-17-3-3	0.1302 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*sent to Kelpaco 5/29/86*



To:  
Michael D. Minger/Battle Creek

Date:  
April 4, 1986

From:  
Irma Warner/St. Paul Mill

Subject:  
**PCB ANALYSES  
BATTLE CREEK BOARD**

Received 3/31/86

Analyzed 4/1/86

86-2-16-3-2

0.0186 ppm

*2/16/86*

Analyzed 4/2/86

86-3-9-3-1

0.0520 ppm

*3/9/86*

Analyzed 4/3/86

86-3-21-3-3

0.1022 ppm

*3/21/86*

Analyses performed using the FDA approved method.

yd

cc: Gary Kaziukewicz  
Larry Harris

*sent to  
K. (log)  
4/11/86*



To  
Michael D. Minger/Battle Creek

Date  
February 17, 1986

From  
Irma Warner/St. Paul Mill

Subject  
**PCB ANALYSES  
BATTLE CREEK BOARD**

Received 2/12/86

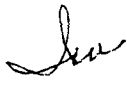
Analyzed 2/13/86

85-11-20-3-3	0.0279 ppm
85-12-7-3-2	0.0436 ppm
85-12-19-3-1	0.0401 ppm

Analyzed 2/14/86

86-1-8-3-1	0.0634 ppm
86-1-26-3-2	0.0701 ppm

Analyses performed using the FDA approved method.

  
yd  
cc: Gary Kaziukewicz  
Larry Harris

*Sent to Kelpeco  
2/25/86*



To  
Michael D. Minger/Battle Creek

Date  
November 13, 1985

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 11/11/85

Analyzed 11/12/85

10/95 3 <sup>rd</sup>	85-9-28-3-3	0.15 ppm
11/85 3 <sup>rd</sup>	85-10-10-3-3	0.13 ppm
11/85 1 <sup>st</sup>	85-10-14-3-1	0.04 ppm

Analyzed 11/13/85

25/95 2 <sup>nd</sup>	85-10-25-3-2	0.19 ppm
11/85 2 <sup>nd</sup>	85-11-5-3-2	0.40 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

Sent to Ref<sup>co</sup>  
11/21/85



To:

Michael D. Minger/Battle Creek

From:

Irma Warner/St. Paul Mill

*Irma*

Received 9/24/85

Analyzed 9/25/85

*9/21/85 1st Shift* 85-8-21-3-1

0-1758 ppm

*12/85 3rd Shift* 85-9-2-3-3

0.1134 ppm

Analyzed 9/26/85

*9/85 1st Shift* 85-9-8-3-1

0.0825 ppm

*8/85 2nd Shift* 85-9-18-3-2

0.0551 ppm

Analyses performed using the FDA approved method.

yd

cc: Kary Kaziukewicz  
Larry Harris

*Sent to Kelpac  
10/7/85*



To :

Michael D. Minger/Battle Creek Mill

Date :

August 14, 1985

From :

Irma Warner/St. Paul Mill

Subject :

PCB Analyses  
Battle Creek Board

A handwritten signature, likely of Irma Warner, written in cursive.

Received 8/9/85:

Analyzed 8/9/85

85-6-28-3-3                      0.2381 ppm

85-6-22-3-1                      0.1077 ppm

Analyzed 8/10/85

85-6-13-3-2                      0.1866 ppm

85-6-3-3-3                      0.2780 ppm

Analyses performed using the FDA approved method.

IW:yd

cc: Gary Kaziukewicz  
Larry Harris

ent to  
Kelpaco  
8/21/85

To	Date
Michael D. Minger/Battle Creek	May 21, 1985
From	Subject
Irma Warner/St. Paul Mill	PCB Analyses Battle Creek Board

Received 5/15/85

Analyzed 5/16/85

85-3-15-3-3	0.1322 ppm
85-3-25-3-2	0.1791 ppm

Analyzed 5/17/85

85-4-13-3-1	0.1227 ppm
85-4-21-3-2	0.1009 ppm

Analyzed 5/20/85

85-5-12-3-3	0.0230 ppm
-------------	------------

Analyses performed using the FDA approved method. Board enclosed.

IW:yd  
enc.  
cc: Gary Kaziukewicz  
Larry Harris

*Sent to  
Kel Paco 6/3/85*



**Champion**  
Champion International Corporation

To:

Michael D. Minger/Battle Creek

Date:

March 11, 1985

From:

Irma Warner/St. Paul Mill

Subject:

PCB Analyses  
Battle Creek Board

Received 3/7/85

Analyzed 3-8-85

84-12-19-3-3

0.15 ppm

85-1-7-3-1

0.07 ppm

Analyzed 3-11-85

85-1-25-3-2

0.07 ppm

85-2-14-3-3

0.09 ppm

Analyses performed using the FDA approved method. Board enclosed.

IW:yd

enc.

cc: Gary Kaziukewicz  
Larry Harris

*Sent to  
Kelpaco  
3/14/85*

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: January 24, 1985

Laboratory Code: 84993

To: St. Regis Paper Company  
79 West Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Mike Minger

P.O. Number: 31678-4013

Re: Four (4) paperboard samples received December 5, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, ppm (PCB) (Aroclor 1242)</u>
84993 (241)	84-11-30-3-3	<0.5
84993 (242)	84-11-18-3-2	1.3
84993 (243)	84-10-28-3-3	<0.5
84993 (244)	84-10- 8-3-2	<0.5

*sent to  
Kellogg's  
1/29/85*

WHB/mcm

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

KAR Laboratories, Inc.

219 Peekstok Road  
Kalamazoo, Michigan 49001

Telephone (616) 381-9666

ANALYTICAL REPORT

Date: November 1, 1984

Laboratory code: 84836

To: St. Regis Paper Company  
79 West Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Mike Minger

P.O. Number: PM 31678-4013

Re: Three (3) paperboard samples received October 3, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84836 (238)	84-9-28-3-3	<0.5
84836 (239)	84-9-16-3-1	<0.5
84836 (240)	84-8-28-3-2	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

*Sent  
to Kelpaco  
11/7/84*

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: September 24, 1984

Laboratory code: As below

To: St. Regis Paper Company  
79 West Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Mike Minger

Purchase Order # PM 31678-4013

Re: Three (3) paperboard samples received on dates as indicated  
for Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84703 (235)	84-8-14-3-2	8/16/84	<0.5
84703 (236)	84-7-31-3-3	8/16/84	<0.5
84703 (237)	84-7-19-3-1	8/16/84	<0.5

Sent to  
Kelllogg's  
OK  
10/15/84

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma / mcm*  
William H. Bouma, Ph.D  
Director

WHB/mcm

KAR Laboratories, Inc.  
219 Peckstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: July 23, 1984

Laboratory code: As below

To: St. Regis Paper Company  
79 West Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # PM 31678-4013

Re: Five (5) paperboard samples received on dates as indicated  
for Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84486 (230)	84-6- 3-3-1	6-19-84	<0.5
84486 (231)	84-6-16-3-2	6-19-84	<0.5
84587 (232)	84-7-12-3-2	7-17-84	<0.5
84587 (233)	84-6-30-3-3	7-17-84	<0.5
84587 (234)	84-6-22-3-1	7-17-84	<0.5

*Sent to  
Kellogg's*

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: June 11, 1984

Laboratory code: 84432

To: St. Regis Paper Company  
79 West Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # PM 31678-  
4013

Re: Three (3) paperboard samples received June 1, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84432 (227)	84-5-13-3-1	<0.5
" (228)	84-5-19-3-3	<0.5
" (229)	84-5-29-3-1	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: June 6, 1984

Laboratory code: 84382

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016

Purchase Order # PM 31678-  
4013

Attn: Mr. Edwin Cole

Re: Two (2) paperboard samples received May 11, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84382 (225)	84-5- 8-3-3	<0.5
" (226)	84-4-28-3-2	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

*copy sent to Kullback*

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: May 10, 1984

Laboratory code: 84294

To: St. Regis Paper Company  
79 W. Fountain St.  
Battle Creek, MI 49016

Purchase Order # PM 31678-  
4013

Attn: Mr. Edwin Cole

Re: Five (5) paperboard samples received April 17, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84294 (220)	84-4-12-3-1	<0.5
" (221)	84-4- 7-3-1	<0.5
" (222)	84-3-22-3-2	<0.5
" (223)	84-3-12-3-3	<0.5
" (224)	84-3- 5-3-1	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

*copy sent to William  
31 May 84*

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  

---

Telephone (616) 381-9666

ANALYTICAL REPORT

Date: March 26, 1984

Laboratory code: 84145

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # PM 3128 4013

Re: Two (2) paperboard samples received February 28, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u> (As Aroclor 1242)
84145 (218)	84-2-17-3-1	2/28/84	<0.5
84145 (219)	84-2-23-3-3	2/28/84	<0.5

*sent to Kalamazoo*

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*  
William H. Bouma, Ph.D  
Director

WHB/mcm

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: February 17, 1984

Laboratory code: As below

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # 29432

Re: Seven (7) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u> (As Aroclor 1242)
84057 (211)	83-12-19-3-3	1-31-84	<0.5
84057 (212)	84- 1-10-3-3	1-31-84	<0.5
84057 (213)	84- 1-14-3-1	1-31-84	<0.5
84057 (214)	84- 1-27-3-2	1-31-84	<0.5
84098 (215)	84- 2- 5-3-1	2-14-84	<0.5
84098 (216)	84- 2-12-3-3	2-14-84	<0.5
84098 (217)	84- 1-30-3-3	2-14-84	<0.5

*info sent to Kellogg*

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*  
William H. Bouma, Ph.D  
Director

WHB/mcm

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: January 11, 1984

Laboratory code: (see below)

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # 29432

Re: Four (4) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u> (As Aroclor 1242)
83775 (207)	83-11-29-3-1	12-13-83	<0.5
83775 (208)	83-12-10-3-2	12-13-83	<0.5
83791 (209)	83-12-16-3-3	12-20-83	<0.5
83791 (210)	83-12-13-3-1	12-20-83	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: December 9, 1983

Laboratory code (see below)

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016

Purchase Order # 29432

Attn: Mr. Edwin Cole

Re: Four (4) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u> (As Aroclor 1242)
83710 (203)	83-11- 2-3-1	11-16-83	<0.5
83710 (204)	83-11-11-3-2	11-16-83	<0.5
83739 (205)	83-11-14-3-2	11-28-83	<0.5
83739 (206)	83-11-20-3-3	11-28-83	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

1  
up 1/2  
up 1/2

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: November 14, 1983

Laboratory code: (see below)

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase order # 20432 4013

Re: Four (4) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u> (As Aroclor 1242)
83619 (199)	83-10-4-3-1	10/12/83	0.5
83619 (200)	83-10-10-3-2	10/12/83	1.1
83676 (201)	83-10-18-3-1	10/31/83	<0.5
83676 (202)	83-10-27-3-3	10/31/83	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*  
William H. Bouma, Ph.D  
Director

WHB/mcm

*cons to Keller*

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: October 10, 1983

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # 29432 4013

Re: Five (5) paperboard samples received for Polychlorinated Biphenyl analysis.

Method:  
A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
83545 (194)	83-9-16-3-2	9-20-83	< 0.5
83558 (195)	83-9-19-3-3	9-23-83	0.7 as Aroclor 1242
83568 (196)	83-9-7-3-3	9-27-83	< 0.5
83568 (197)	83-9-11-3-2	9-27-83	< 0.5
83589 (198)	83-9-28-3-3	10- 3-83	< 0.5

Respectfully submitted,  
KAR LABORATORIES, INC.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

*copy sent to  
copy 11/2/83*

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: September 13, 1983

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016

Purchase Order # 29432 4013

Attn: Mr. Edwin Cole

Re: Three (3) paperboard samples received for Polychlorinated Biphenyl analysis.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
K-9996 (191)	83-8-19-3-3	8-23-83	< 0.5
K-10026 (192)	83-8-24-3-2	8-30-83	< 0.5
83502 (193)	83-8-29-3-1	9-01-83	< 0.5

Respectfully submitted,  
KAR LABORATORIES, INC.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

*copy sent to client*

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9566

ANALYTICAL REPORT

Date: August 19, 1983

To: St. Regis Paper Company  
79 E. Fountain Street  
Battle Creek, Michigan 49016  
Attn: Mr. Edwin Cole

Purchase Order #PM 29432 4013

Re: Ten (10) paperboard samples received for Polychlorinated Biphenyl  
analysis.



Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
K-9932 (181)	83-7-9-3-1	8-3-83	< 0.5
K-9932 (182)	83-7-12-3-2	8-3-83	< 0.5
K-9932 (183)	83-7-15-3-3	8-3-83	< 0.5
K-9932 (184)	83-7-23-3-3	8-3-83	< 0.5
K-9932 (185)	83-7-28-3-3	8-3-83	< 0.5
K-9932 (186)	84-7-31-3-1	8-3-83	< 0.5
K-9942 (187)	83-8-3-3-3	8-5-83	< 0.5
K-9946 (188)	83-8-4-3-2	8-8-83	< 0.5
K-9954 (189)	83-8-8-3-1	8-10-83	< 0.5
K-9970 (190)	83-8-14-3-1	8-16-83	< 0.5

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director 

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: July 18, 1983

To: St. Regis Paper Company                      Laboratory code: K-9815  
79 E. Fountain Street                      Purchase Order # PM 29432 4013  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: One (1) paperboard sample received June 13, 1983 for  
polychlorinated biphenyl (PCB) analysis.


Results:

Method: A.O.A.C. (1980) 29.037

Laboratory code: K-9815 (180)

<u>Sample Description</u>	<u>Date Received</u>	<u>As Arochlor 1254, Polychlorinated Biphenyl, ppm</u>
83-6-8-3-3	6-13-83	<0.5

Respectfully submitted,  
THE KAR LABORATORY

  
John N. Karnemaat  
Director

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

COPY SENT TO  
KALAMAZOO  
7 MAY 83

ANALYTICAL REPORT

Date: May 4, 1983

To: St. Regis Paper Company  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # PM 29432 4013

Re: Six (6) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Received</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, (as Aroclor 1254) ppm</u>
K-9596 168	3-20-83	83-3-29-3-3	< 0.5
K-9650 169	4-18-83	83-4-13-3-2	< 0.5
K-9674 170	4-26-83	83-4-18-1-1 <i>FIELD FROM #1</i>	< 0.5
K-9674 171	4-26-83	83-4-18-2-1	< 0.5
K-9674 172	4-26-83	83-4-24-3-1 <i>FIELD FROM #2</i>	< 0.5
K-9674 173	4-26-83	83-4-21-3-3	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

CR

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: March 11, 1983

To: St. Regis Paper Company      Purchase Order # PM 29432 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole


Re: Six (6) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	(As Aroclor 1254) <u>Polychlorinated Biphenyls, ppm</u>
K-9464 (162)	83-1-31-3-2	2-2-83	< 0.5
K-9493 (163)	83-2-9-3-3	2-14-83	< 0.5
K-9504 (164)	83-2-16-3-3	2-18-83	< 0.5
K-9522 (165)	83-2-22-3-3	2-25-83	< 0.5
K-9528 (166)	83-2-28-3-3	3-2-83	< 0.5
K-9541 (167)	83-3-5-3-1	3-8-83	< 0.5

Respectfully submitted,  
THE KAR LABORATORY

  
John N. Karnemaat  
Director

UK

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: February 7, 1983

To: St. Regis Paper Company P.O. # PM 29432 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Five (5) paperboard samples received for Poly-  
chlorinated Biphenyl (PCB) analysis.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>As Aroclor 1254, Polychlorinated Biphenyl, ppm</u>
K-9390 (157)	83-1-3-3-3	1-5-83	< 0.5
K-9403 (158)	83-1-7-3-1	1-11-83	< 0.5
K-9415 (159)	83-1-13-3-1	1-17-83	< 0.5
K-9436 (160)	83-1-23-3-2	1-25-83	< 0.5
K-9458 (161)	83-1-26-3-3	2-1-83	< 0.5

Respectfully submitted,

THE KAR LABORATORY



John N. Karnemaat  
Director

CR

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: January 3, 1982

To: St. Regis Paper Company      Purchase Order # PM 29432 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Seven (7) paperboard samples received for Polychlorinated  
Biphenyl analyses.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm</u> <u>(As Aroclor 1254)</u>
K-9322 (150)	12-6-82	82-14-29-3-3	< 0.5
K-9322 (151)	12-6-82	82-11-30-3-1	< 0.5
K-9329 (152)	12-8-82	82-12-2-3-3	< 0.5
K-9340 (153)	12-13-82	82-12-7-3-3	< 0.5
K-9344 (154)	12-14-82	82-12-10-3-1	< 0.5
K-9369 (155)	12-22-82	82-12-15-3-2	< 0.5
K-9375 (156)	12-23-82	82-12-19-3-3	< 0.5

Respectfully submitted,  
THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

*JK*

JNK:cr

*\$ 45.00*

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: December 3, 1982

To: St. Regis Paper Company      Laboratory code: See Below  
79 E. Fountain Street  
Battle Creek, MI 49016

Re: Eleven (11) paperboard samples received for  
Polychlorinated Biphenyl analysis. The samples  
are submitted under Purchase Order # PM 27633 4013.

Results:

Method: A.O.A.C. (1980) 29.037

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (as Aroclor 1254)</u>
K-9225 (139)	11-4-82	82-10-22-3-3	< 0.5
K-9225 (140)	11-4-82	82-11-1-3-3	< 0.5
K-9227 (141)	11-5-82	82-11-3-3-1	< 0.5
K-9231 (142)	11-8-82	82-11-4-3-2	< 0.5
K-9236 (143)	11-9-82	82-11-2-3-1	< 0.5
K-9236 (144)	11-9-82	82-11-5-3-1	< 0.5
K-9254 (145)	11-12-82	82-11-9-3-2	< 0.5
K-9260 (146)	11-15-82	82-11-10-3-1	< 0.5
K-9265 (147)	11-16-82	82-11-11-3-3	< 0.5
K-9287 (148)	11-22-82	82-11-14-3-2	< 0.5
K-9287 (149)	11-22-82	82-11-16-3-3	< 0.5

Respectfully submitted,  
THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

To: St. Regis Paper Company      Date: November 1, 1982  
79 E. Fountain Street      Laboratory code: See Below  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Purchase Order # PM 27633 4013

Nine (9) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Aroclor 1254)</u>
K-9143 (130)	10-8-82	82-10-4-3-2	< 0.5
K-9143 (131)	10-8-82	82-10-5-3-3	< 0.5
K-9158 (132)	10-13-82	82-10-9-3-3	< 0.5
K-9158 (133)	10-13-82	82-10-10-3-1	< 0.5
K-9169 (134)	10-18-82	82-10-11-3-2	< 0.5
K-9169 (135)	10-18-82	82-10-12-3-3	< 0.5
K-9169 (136)	10-18-82	82-10-14-3-2	< 0.5
K-9173 (137)	10-19-82	82-10-15-3-1	< 0.5
K-9190 (138)	10-25-82	82-10-21-3-3	< 0.5

Respectfully submitted,

THE KAR LABORATORY



John N. Karnemaat  
Director



JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: October 8, 1982

To: St. Regis Paper Company P.O. # PM 27633 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Four (4) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Results:

Method: A. D. A. C. (1980) 29.037

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm</u> <u>(As Arochlor 1254)</u>
K-9078 (126)	9-16-82	82-9-14-3-1	< 0.5
K-9086 (127)	9-20-82	82-9-16-3-2	< 0.5
K-9088 (128)	9-21-82	82-9-17-3-1	< 0.5
K-9104 (129)	9-27-82	82-9-23-3-1	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

*CR*

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: September 20, 1982

To: St. Regis Paper Company P. O. # PM 27633 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Six (6) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Results:

Method: A.O.A.C. (1980) 29.037

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-9027 (120)	8-30-82	82-8-26-3-2	< 0.5
K-9060 (121)	9-09-82	82-9-7-3-3	< 0.5
K-9062 (122)	9-10-82	82-9-8-3-1	< 0.5
K-9069 (123)	9-14-82	82-9-11-3-3	< 0.5
K-9069 (124)	9-14-82	82-9-12-3-1	< 0.5
K-9073 (125)	9-15-82	82-9-13-3-2	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

*CP*

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: August 27, 1982

To : St. Regis Paper Company      P.O. # PM 27633 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re : Six (6) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.

Results:

Method: A.O.A.C. (1980) 29.037

<u>Laboratory code</u>	<u>Date submitted</u>	<u>Sample description</u>	<u>PCB, ppm</u> <u>(As Arochlor 1254)</u>
K-8978 (114)	8-18-82	82-8-15-3-2	<0.5
K-8978 (115)	8-18-82	82-8-16-3-3	<0.5
K-8987 (116)	8-19-82	82-8-17-3-1	<0.5
K-8993 (117)	8-20-82	82-8-18-3-2	<0.5
K-8997 (118)	8-23-82	82-8-19-3-3	<0.5
K-9002 (119)	8-25-82	82-8-20-3-1	<0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*  
John N. Karnemaat  
Director *AK*

JNK:nem

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: August 13, 1982

To: St. Regis Paper Company                      Purchase Order # PM 27633 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Eight (8) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.


Results:

Method: A.O.A.C. (1980) 29.037

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8908 (106)	7-23-82	82-7-20-3-1	1.4
K-8908 (107)	7-23-82	82-7-21-3-3	1.3
K-8917 (108)	7-28-82	82-7-22-3-2	< 0.5
K-8917 (109)	7-28-82	82-7-23-3-1	< 0.5
K-8917 (110)	7-28-82	82-7-24-3-3	< 0.5
K-8917 (111)	7-28-82	82-7-26-3-3	< 0.5
K-8926 (112)	7-28-82	82-7-27-3-1	< 0.5
K-8949 (113)	8-05-82	82-7-29-3-1	0.9

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director

JNK:cr



THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: August 3, 1982

To: St. Regis Paper Company  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Purchase Order # PM 27633 4013

Re: Five (5) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.

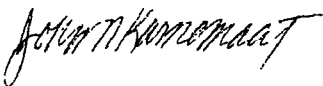
Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8876 (101)	7-14-82	82-7-11-3-1	1.0
K-8890 (102)	7-19-82	82-7-12-3-3	1.7
K-8890 (103)	7-19-82	82-7-13-3-1	1.1
K-8893 (104)	7-20-82	82-7-15-3-3	0.9
K-8893 (105)	7-20-82	82-7-16-3-2	1.0

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director

JNK:cr



THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: July 15, 1982

To: St. Regis Paper Company                      Purchase Order # PM 27633 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Eight (8) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8847 (93)	7-01-82	82-6-29-3-1	< 0.5
K-8851 (94)	7-02-82	82-6-30-3-1	< 0.5
K-8857 (95)	7-07-82	82-7-1-3-1	< 0.5
K-8861 (96)	7-07-82	82-7-2-3-1	< 0.5
K-8865 (97)	7-09-82	82-7-7-3-1	< 0.5
K-8869 (98)	7-12-82	82-7-8-3-1	< 0.5
K-8873 (99)	7-13-82	82-7-9-3-1	< 0.5
K-8873 (100)	7-13-82	82-7-10-3-1	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*  
John N. Karnemaat  
Director

*CR*

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: July 2, 1982

To: St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Purchase Order # PM 27633 4013

Re: Six (6) paperboard samples received for Polychlorinated  
Biphenyls (PCB) analysis.

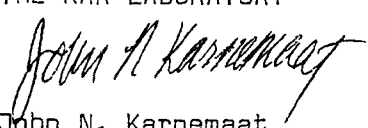
Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (as Arochlor 1254)</u>
K-8792 (87)	6-14-82	82-6-10-3-3	< 0.5
K-8798 (88)	6-15-82	82-6-11-3-1	< 0.5
K-8799 (89)	6-16-82	82-6-14-3-1	< 0.5
K-8811 (90)	6-21-82	82-6-15-3-1	< 0.5
K-8816 (91)	6-22-82	82-6-18-3-1	< 0.5
K-8838 (92)	6-30-82	82-6-28-3-1	< 0.5

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: June 18, 1982

To: St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Purchase Order # PM 27633 4013

Re: Twelve (12) paperboard samples received for Polychlorinated  
Biphenyls (PCB) analysis.

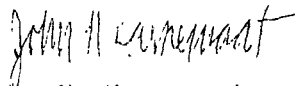
Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8751 (75)	5-28-82	82-5-26-3-1	< 0.5
K-8751 (76)	5-28-82	82-5-25-3-3	< 0.5
K-8762 (77)	6-03-82	82-6-1-3-2	< 0.5
K-8762 (78)	6-03-82	82-6-1-3-3	< 0.5
K-8773 (79)	6-07-82	82-6-2-3-1	< 0.5
K-8773 (80)	6-07-82	82-6-2-3-2	< 0.5
K-8773 (81)	6-07-82	82-6-2-3-3	< 0.5
K-8776 (82)	6-09-82	82-6-3-3-1	< 0.5
K-8776 (83)	6-09-82	82-6-4-3-1	< 0.5
K-8776 (84)	6-09-82	82-6-5-3-1	< 0.5
K-8776 (85)	6-09-82	82-6-6-3-1	< 0.5
K-8776 (86)	6-09-82	82-6-7-3-1	< 0.5

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director

CF

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: May 28, 1982

To : St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016

Purchase Order # PM 27633 4013

Attention: Mr. Edwin Cole

Re: Eight (8) paperboard sample received in May 1982 for  
Polychlorinated Biphenyls (PCB) analysis.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8705 (67)	5-18-82	82-5-7-3-2	0.7
K-8719 (68)	5-20-82	82-5-18-3-1	0.6
K-8719 (69)	5-20-82	82-5-18-3-2	0.6
K-8719 (70)	5-20-82	82-5-18-3-3	0.5
K-8727 (71)	5-21-82	82-5-19-3-1	< 0.5
K-8727 (72)	5-21-82	82-5-19-3-2	< 0.5
K-8727 (73)	5-21-82	82-5-19-3-3	< 0.5
K-8734 (74)	5-24-82	82-5-20-3-1	< 0.5

Respectfully submitted,

THE KAR LABORATORY



John N. Karnemaat  
Director



JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: May 18, 1982

To: St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016

Purchase Order # PM 27633 4013

Attention: Mr. Edwin Cole

Re: Eleven (11) paperboard samples received May 4, 1982 and May 10, 1982  
for Polychlorinated Biphenyls (PCB) analysis.

Method: AOAC (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm</u> <u>(As Arochlor 1254)</u>
K-8652 (56)	5-04-82	82-4-28-2-2	< 0.5
K-8652 (57)	5-04-82	82-4-28-2-3	< 0.5
K-8652 (58)	5-04-82	82-4-28-3-1	< 0.5
K-8652 (59)	5-04-82	82-4-28-3-2	< 0.5
K-8652 (60)	5-04-82	82-4-28-3-3	< 0.5
K-8652 (61)	5-04-82	82-4-30-3-1	< 0.5
K-8652 (62)	5-04-82	82-4-30-3-2	< 0.5
K-8667 (63)	5-10-82	82-5-5-3-1	< 0.5
K-8667 (64)	5-10-82	82-5-5-3-2	< 0.5
K-8667 (65)	5-10-82	82-5-5-3-3	< 0.5
K-8667 (66)	5-10-82	82-5-6-3-1	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director *CP*

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: May 11, 1982

To: St. Regis Paper Company  
79 East Fountain St.  
Battle Creek, MI 49016

P.O. Number: PM 27633 4013

Attention: Mr. Edwin Cole

re: Seven (7) paperboard samples submitted on April 29 and May 3, 1982  
for Polychlorinated Biphenyl (PCB) analysis.

Method: ADAC (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8640 (49)	4-29-82	82-4-26-2-2	0.6
K-8640 (50)	4-29-82	82-4-26-2-3	0.5
K-8640 (51)	4-29-82	82-4-27-2-1	<0.5
K-8640 (52)	4-29-82	82-4-27-3-3	<0.5
K-8646 (53)	5-3-82	82-4-29-3-1	<0.5
K-8646 (54)	5-3-82	82-4-29-3-2	<0.5
K-8646 (55)	5-3-82	82-4-29-3-3	<0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*  
John N. Karnemaat  
Director *jak*

JNK:jak

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: May 3, 1982

To: St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

P.O. No: PM 27633-4013

Re: Eight (8) paperboard samples submitted during April  
for Polychlorinated Biphenyl (PCB) analysis.

Method: AOAC (1980) 29.037.

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm</u> <u>(As Arochlor 1254)</u>
K-8609	4-20-82	82-4-16-3-1	< 0.5
K-8609	4-20-82	82-4-16-3-2	< 0.5
K-8615	4-22-82	82-4-20-2-3	< 0.5
K-8619	4-23-82	84-4-21-2-1	< 0.5
K-8619	4-23-82	84-4-21-2-2	< 0.5
K-8626	4-26-82	82-4-22-3-2	< 0.5
K-8628	4-27-82	82-4-23-3-1	< 0.5
K-8628	4-27-82	82-4-23-3-2	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

JNK:cr

*UP*

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: April 26, 1982

To : St. Regis Paper Company                      Purchase Order No. PM 27633 4013  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re : Nine (9) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.

Method: AOAC (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8574	04-13-82	82-4-8-3-1	< 0.5
K-8579	04-14-82	82-4-12-3-2	< 0.5
K-8579	04-14-82	82-4-12-3-3	< 0.5
K-8596	04-16-82	82-4-13-3-1	< 0.5
K-8596	04-16-82	82-4-13-3-2	< 0.5
K-8596	04-16-82	82-4-13-3-3	< 0.5
K-8596	04-16-82	82-4-14-3-3	< 0.5
K-8603	04-19-82	82-4-15-3-2	< 0.5
K-8603	04-19-82	82-4-15-3-3	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*  
John N. Karnemaat  
Director

*CP*

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: April 19, 1982

To : St. Regis Paper Company      Purchase Order No: PM 27633 4013  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re : Eleven (11) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.

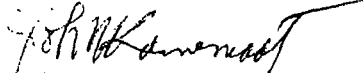
Method: AOAC (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (as Arochlor 1254)</u>
K-8562	4- 7-82	82-4-5-3-1	<0.5
K-8562	4- 7-82	82-4-5-3-3	<0.5
K-8568	4- 9-82	82-4-2-3-3	<0.5
K-8568	4- 9-82	82-4-3-3-1	<0.5
K-8568	4- 9-82	82-4-4-3-1	<0.5
K-8568	4- 9-82	82-4-4-3-2	<0.5
K-8568	4- 9-82	82-4-4-3-3	<0.5
K-8568	4- 9-82	82-4-6-3-1	<0.5
K-8568	4- 9-82	82-4-6-3-2	<0.5
K-8568	4- 9-82	82-4-6-3-3	<0.5
K-8568	4- 9-82	82-4-7-3-1	<0.5

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director

JNK:nem

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: April 9, 1982

To : St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Purchase Order No. PM 27633 4013

Re : Ten (10) paperboard sample received for Polychlorinated  
Biphenyl (PCB) analysis.

Method: ADAC (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (as Arochlor 1254)</u>
K-8551	4-01-82	82-3-26-3-1	< 0.5
K-8551	4-01-82	82-3-26-3-2	< 0.5
K-8551	4-01-82	82-3-26-3-3	< 0.5
K-8551	4-01-82	82-3-27-3-1	< 0.5
K-8551	4-01-82	82-3-27-3-2	< 0.5
K-8553	4-02-82	82-3-30-3-1	< 0.5
K-8553	4-02-82	82-3-30-3-3	< 0.5
K-8553	4-02-82	82-3-31-3-2	< 0.5
K-8556	4-05-82	82-3-31-1-2	< 0.5
K-8556	4-05-82	82-3-31-2-3	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

*CR*

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: April 2, 1982

To : St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Purchase Order No. PM 27633 4013

Re : Ten (10) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.

Method: AOAC (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (as Arochlor 1254)</u>
K-8524	3-24-82	82-3-22-2-3	< 0.5
K-8529	3-25-82	82-3-23-2-1	< 0.5
K-8529	3-25-82	82-3-23-3-1	< 0.5
K-8529	3-25-82	82-3-23-3-2	< 0.5
K-8535	3-26-82	82-3-24-3-1	< 0.5
K-8535	3-26-82	82-3-24-3-2	< 0.5
K-8535	3-26-82	82-3-24-3-3	< 0.5
K-8537	3-29-82	82-3-25-3-1	< 0.5
K-8537	3-29-82	82-3-25-3-2	< 0.5
K-8537	3-29-82	82-3-25-3-3	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*  
John N. Karnemaat  
Director *CK*

JNK:cr

STATE OF MICHIGAN



JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

RONALD O. SKOOG, Director

District 12 Headquarters  
P.O. Box 355, Plainwell, Michigan 49080

April 2, 1985

Mr. Mike Knapp, Manager of Utilities  
Mead Paperboard Products  
P.O. Box 187  
Otsego, Michigan 49078

Dear Mr. Knapp:

Attached is a copy of the Compliance Inspection Report (EPA 3560.3) completed on March 29, 1985. Results of wastewater samples collected on January 7, 1985, were given to you on March 29, 1985.

Results of the samples collected in January indicate that Mead met the effluent limitations contained in NPDES Permit #MI 0000787.

During the inspection I did note several problems that should be addressed by Mead:

Operator Certification - David Keith is the only certified operator at Mead. NPDES regulations require that wastewater treatment facilities must be supervised by a certified operator. In the event the current operator is unable to perform his duties for an extended period of time, Mead would be in a position of not fulfilling the certified operator requirement. I strongly urge that Mead take steps to certify at least one additional operator.

*replied  
see  
4-25-85  
response*  
Cleanliness and Maintenance - The overall maintenance of the wastewater treatment facility was not adequate. Improvements could be made in several ways. The center wells of both clarifiers had a thick layer of floating material. The clarifier surface outside the center well also had mats of floating material. The clarifier should be cleaned more often.

The ground surface near the disk filter was covered with paper sludge. It was evident that paper sludge and, therefore, primary effluent had been spilled to the river. This is unacceptable. Paper sludge remaining on the ground should be cleaned up and properly disposed of. A file review indicates that this filter has failed several times in the past. I question the reliability of this piece of equipment. To prevent future spills, Mead should consider replacing this filter with a more reliable piece of equipment.

The berms around the lagoons have been allowed to become overgrown with brush. While no immediate adverse effect may result, I suspect that berm maintenance will become a problem.

(continued)

RT 104191

Mr. Mike Knapp  
Mead Paperboard Products  
April 2, 1985  
Page 2

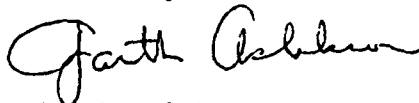
Mead has only one person assigned to the wastewater treatment facility. It is my recommendation that additional help be assigned to the water treatment facility to correct the maintenance chores cited above. Mead has made a significant capital investment in its wastewater treatment facility. It seems prudent to maximize the life of the facility by providing required maintenance.

*closed*  
By-Pass - During the inspection a by-pass pipe was observed at outfall 002. By-passing of raw plant effluent was retarded by a river gate. A January 28, 1983, letter from you to Marge Spruit, of our Grand Rapids office, partially addressed this unauthorized by-pass. In that letter you stated that a barrier was placed to eliminate contamination of noncontact cooling water at outfall 002. Also, you stated that a second sump pump was installed to lessen the possibility of noncontact cooling water contamination. You go on to say that during the period of May 1982 to January 1983, no by-passes occurred. A review of my file indicates that Mead has not reported any by-passes since January 1983. Since Mead is required by NPDES permit to report by-passes, I assume that none have occurred.

I want to take this opportunity to inform Mead that the discharge of untreated wastewater is a violation of Act 245, P.A. of 1929 as amended. Although my records show such a discharge has not occurred since May 1982, my inspection revealed that the potential for an illegal discharge to occur is present. The liability of this potential violation far exceeds any advantage. I see no reason why the existing by-pass should not be sealed up. Therefore, Mead should proceed immediately to seal up the existing by-pass pipe.

I am looking forward to your comments on this inspection report. In order that the problems identified may be addressed in a timely manner, I am asking that you make your comments available by April 26, 1985.

Sincerely,



Garth Aslakson  
Water Quality Specialist  
Surface Water Quality Division  
Plainwell District  
(616) 685-9886

GA:ek  
Enclosure  
cc: B. Long

RT 104192

## NPDES COMPLIANCE INSPECTION REPORT (Coding Instructions on back of last page)

TRANSACTION CODE		NPDES	YR	MO	DA	TYPE	INSPEC TOR	FAC TYPE	TIME	
N	5	MI0000707	85	03	29	5	5	2	9:00	3:00
1	2	3	11	12	17	18	19	20	a.m.	p.m.

## REMARKS

SAMPLES COLLECTED JAN. 7, 85. FORH 3560 COMPLETE

ADDITIONAL  
TED 106 3-29-85.

## SECTION A - Permit Summary

NAME AND ADDRESS OF FACILITY (Include County, State and ZIP code)		EXPIRATION DATE
MEAD CORP.; PAPERBOARD DIVISION 431 Helen STREET OTSEGO, MI 49078 Allegan Co. Michigan		31 March 89
RESPONSIBLE OFFICIAL		ISSUANCE DATE
Mike KNAPP		24 May 84
FACILITY REPRESENTATIVE		PHONE
David Keith		616-692-6211
TITLE		PHONE
Superintendent of Maint.		616-692-6211
TITLE		PHONE
Operator		616-692-6211

## SECTION B - Effluent Characteristics (Additional sheets attached \_\_\_\_\_)

PARAMETER/ OUTFALL		MINIMUM	AVERAGE	MAXIMUM	ADDITIONAL
FLOW (MGD)	SAMPLE MEASUREMENT		0.42		
	PERMIT REQUIREMENT	N.A.	N.A.	N.A.	
BOD (kg/day)	SAMPLE MEASUREMENT	<del>295</del>	98	<del>591</del>	
	PERMIT REQUIREMENT	—	295	591	
T.S.S. (kg/day)	SAMPLE MEASUREMENT	—	120	—	
	PERMIT REQUIREMENT	—	295	591	
T. Phos. (mg/l)	SAMPLE MEASUREMENT	—	0.88	0.92	
	PERMIT REQUIREMENT	N.A.	N.A.	N.A.	
PH	SAMPLE MEASUREMENT	8.0	—	8.4	
	PERMIT REQUIREMENT	6.0	—	9.0	

## SECTION C - Facility Evaluation (S = Satisfactory, U = Unsatisfactory, N/A = Not applicable)

S	EFFLUENT WITHIN PERMIT REQUIREMENTS	U	OPERATION AND MAINTENANCE	S	SAMPLING PROCEDURES
S	RECORDS AND REPORTS	S	COMPLIANCE SCHEDULE	S	LABORATORY PRACTICES
S	PERMIT VERIFICATION	S	FLOW MEASUREMENTS		OTHER:

## SECTION D - Comments

## SECTION E - Inspection/Review

SIGNATURES	AGENCY	DATE	ENFORCEMENT DIVISION USE ONLY
INSPECTED BY Gareth Osborn	MDNR	29 Mar 85	COMPLIANCE STATUS
INSPECTED BY JOHN BANTJES (gma)	MDNR	29 Mar 85	<input type="checkbox"/> COMPLIANCE
REVIEWED BY			<input type="checkbox"/> NONCOMPLIANCE



ctions F thru L: Complete on all inspections, as appropriate. N/A = Not Applicable

PERMIT NO.

MI 0000787

## SECTION F - Facility and Permit Background

ADDRESS OF PERMITTEE IF DIFFERENT FROM FACILITY  
(including City, County and ZIP code)

SAME AS ABOVE

DATE OF LAST PREVIOUS INVESTIGATION BY EPA/STATE

10 May 1982

FINDINGS

## SECTION G - Records and Reports

RECORDS AND REPORTS MAINTAINED AS REQUIRED BY PERMIT.

☒ YES☐ NO☐ N/A (Further explanation attached \_\_\_\_\_)

DETAILS:

## a) ADEQUATE RECORDS MAINTAINED OF:

(i) SAMPLING DATE, TIME, EXACT LOCATION

☒ YES☐ NO☐ N/A

(ii) ANALYSES DATES, TIMES

☒ YES☐ NO☐ N/A

(iii) INDIVIDUAL PERFORMING ANALYSIS

☒ YES☐ NO☐ N/A

(iv) ANALYTICAL METHODS/TECHNIQUES USED

☒ YES☐ NO☐ N/A

(v) ANALYTICAL RESULTS (e.g., consistent with self-monitoring report data)

☒ YES☐ NO☐ N/Ab) MONITORING RECORDS (e.g., flow, pH, D.O., etc.) MAINTAINED FOR A MINIMUM OF THREE YEARS  
INCLUDING ALL ORIGINAL STRIP CHART RECORDINGS (e.g. continuous monitoring instrumentation,  
calibration and maintenance records).☒ YES☐ NO☐ N/A

(c) LAB EQUIPMENT CALIBRATION AND MAINTENANCE RECORDS KEPT.

☒ YES☐ NO☐ N/A

(d) FACILITY OPERATING RECORDS KEPT INCLUDING OPERATING LOGS FOR EACH TREATMENT UNIT.

☒ YES☐ NO☐ N/A

(e) QUALITY ASSURANCE RECORDS KEPT.

☒ YES☐ NO☐ N/A(f) RECORDS MAINTAINED OF MAJOR CONTRIBUTING INDUSTRIES (and their compliance status) USING  
PUBLICLY OWNED TREATMENT WORKS.☐ YES☐ NO☒ N/A

## SECTION H - Permit Verification

INSPECTION OBSERVATIONS VERIFY THE PERMIT.

☒ YES☐ NO☐ N/A (Further explanation attached \_\_\_\_\_)

DETAILS:

(a) CORRECT NAME AND MAILING ADDRESS OF PERMITTEE.

☒ YES☐ NO☐ N/A

(b) FACILITY IS AS DESCRIBED IN PERMIT.

☒ YES☐ NO☐ N/A(c) PRINCIPAL PRODUCT(S) AND PRODUCTION RATES CONFORM WITH THOSE SET FORTH IN PERMIT  
APPLICATION.☒ YES☐ NO☐ N/A

(d) TREATMENT PROCESSES ARE AS DESCRIBED IN PERMIT APPLICATION.

☒ YES☐ NO☐ N/A

(e) NOTIFICATION GIVEN TO EPA/STATE OF NEW, DIFFERENT OR INCREASED DISCHARGES.

☒ YES☐ NO☐ N/A

(f) ACCURATE RECORDS OF RAW WATER VOLUME MAINTAINED.

☐ YES☐ NO☒ N/A

(g) NUMBER AND LOCATION OF DISCHARGE POINTS ARE AS DESCRIBED IN PERMIT.

☒ YES☐ NO☐ N/A

(h) CORRECT NAME AND LOCATION OF RECEIVING WATERS.

☒ YES☐ NO☐ N/A

(i) ALL DISCHARGES ARE PERMITTED. Potential by-pass to outfall occ

☐ YES☒ NO☐ N/A

## SECTION I - Operation and Maintenance

TREATMENT FACILITY PROPERLY OPERATED AND MAINTAINED.

☐ YES☐ NO☐ N/A (Further explanation attached \_\_\_\_\_)

DETAILS:

(a) STANDBY POWER OR OTHER EQUIVALENT PROVISIONS PROVIDED. 2 - leads, own power

☒ YES☐ NO☐ N/A

(b) ADEQUATE ALARM SYSTEM FOR POWER OR EQUIPMENT FAILURES AVAILABLE.

☐ YES☒ NO☐ N/A

(c) REPORTS ON ALTERNATE SOURCE OF POWER SENT TO EPA/STATE AS REQUIRED BY PERMIT.

☐ YES☐ NO☒ N/A

(d) SLUDGES AND SOLIDS ADEQUATELY DISPOSED.

☒ YES☐ NO☐ N/A

(e) ALL TREATMENT UNITS IN SERVICE.

☒ YES☐ NO☐ N/A(f) CONSULTING ENGINEER RETAINED OR AVAILABLE FOR CONSULTATION ON OPERATION AND  
MAINTENANCE PROBLEMS. Company Engineer Staff☒ YES☐ NO☐ N/A

(g) QUALIFIED OPERATING STAFF PROVIDED. ONE OPERATOR ONLY

☒ YES☐ NO☐ N/A

(h) ESTABLISHED PROCEDURES AVAILABLE FOR TRAINING NEW OPERATORS.

☐ YES☒ NO☐ N/A(i) FILES MAINTAINED ON SPARE PARTS INVENTORY, MAJOR EQUIPMENT SPECIFICATIONS, AND  
PARTS AND EQUIPMENT SUPPLIERS.☒ YES☐ NO☐ N/A(j) INSTRUCTIONS FILES KEPT FOR OPERATION AND MAINTENANCE OF EACH ITEM OF MAJOR  
EQUIPMENT.☒ YES☐ NO☐ N/A

(k) OPERATION AND MAINTENANCE MANUAL MAINTAINED.

☒ YES☒ NO☐ N/A

(l) SPCC PLAN AVAILABLE.

☒ YES☐ NO☐ N/A

(m) REGULATORY AGENCY NOTIFIED OF BY PASSING. (Dates \_\_\_\_\_)

☐ YES☒ NO☐ N/A

(n) ANY BY-PASSING SINCE LAST INSPECTION.

☒ YES☐ NO☐ N/A

(o) ANY HYDRAULIC AND/OR ORGANIC OVERLOADS EXPERIENCED.

☐ YES☒ NO☐ N/A

PERMIT NO.

171 0000787

## SECTION J - Compliance Schedules

PERMITTEE IS MEETING COMPLIANCE SCHEDULE.

☒ YES ☐ NO ☒ N/A (Further explanation attached \_\_\_\_\_)

CHECK APPROPRIATE PHASE(S):

- ☐ (a) THE PERMITTEE HAS OBTAINED THE NECESSARY APPROVALS FROM THE APPROPRIATE AUTHORITIES TO BEGIN CONSTRUCTION.
- ☐ (b) PROPER ARRANGEMENT HAS BEEN MADE FOR FINANCING (mortgage commitments, grants, etc.).
- ☐ (c) CONTRACTS FOR ENGINEERING SERVICES HAVE BEEN EXECUTED.
- ☐ (d) DESIGN PLANS AND SPECIFICATIONS HAVE BEEN COMPLETED.
- ☐ (e) CONSTRUCTION HAS COMMENCED.
- ☐ (f) CONSTRUCTION AND/OR EQUIPMENT ACQUISITION IS ON SCHEDULE.
- ☐ (g) CONSTRUCTION HAS BEEN COMPLETED.
- ☐ (h) START-UP HAS COMMENCED.
- ☐ (i) THE PERMITTEE HAS REQUESTED AN EXTENSION OF TIME.

## SECTION K - Self-Monitoring Program

## Part 1 - Flow measurement (Further explanation attached \_\_\_\_\_)

PERMITTEE FLOW MEASUREMENT MEETS THE REQUIREMENTS AND INTENT OF THE PERMIT  
DETAILS☒ YES ☐ NO ☐ N/A

(i) PRIMARY MEASURING DEVICE PROPERLY INSTALLED.

☒ YES ☐ NO ☐ N/ATYPE OF DEVICE ☒ WEIR ☐ PARSHALL FLUME ☐ MAGMETER ☐ VENTURI METER ☐ OTHER (Specify \_\_\_\_\_)

(ii) CALIBRATION FREQUENCY ADEQUATE (Date of last calibration \_\_\_\_\_)

☒ YES ☐ NO ☐ N/A

(iii) PRIMARY FLOW MEASURING DEVICE PROPERLY OPERATED AND MAINTAINED.

☒ YES ☐ NO ☐ N/A

(iv) SECONDARY INSTRUMENTS (totalizers, recorders, etc.) PROPERLY OPERATED AND MAINTAINED.

☒ YES ☐ NO ☐ N/A

(v) FLOW MEASUREMENT EQUIPMENT ADEQUATE TO HANDLE EXPECTED RANGES OF FLOW RATES.

☒ YES ☐ NO ☐ N/A

## Part 2 - Sampling (Further explanation attached \_\_\_\_\_)

PERMITTEE SAMPLING MEETS THE REQUIREMENTS AND INTENT OF THE PERMIT.

☒ YES ☐ NO ☐ N/A

DETAILS

(i) LOCATIONS ADEQUATE FOR REPRESENTATIVE SAMPLES.

☒ YES ☐ NO ☐ N/A

(ii) PARAMETERS AND SAMPLING FREQUENCY AGREE WITH PERMIT.

☒ YES ☐ NO ☐ N/A

(iii) PERMITTEE IS USING METHOD OF SAMPLE COLLECTION REQUIRED BY PERMIT.

☒ YES ☐ NO ☐ N/AIF NO, ☐ GRAB ☐ MANUAL COMPOSITE ☐ AUTOMATIC COMPOSITE FREQUENCY \_\_\_\_\_

(iv) SAMPLE COLLECTION PROCEDURES ARE ADEQUATE.

☒ YES ☐ NO ☐ N/A

(v) SAMPLES REFRIGERATED DURING COMPOSITING

☒ YES ☐ NO ☐ N/A

(vi) PROPER PRESERVATION TECHNIQUES USED

☒ YES ☐ NO ☐ N/A

(vii) FLOW PROPORTIONED SAMPLES OBTAINED WHERE REQUIRED BY PERMIT

☒ YES ☐ NO ☐ N/A

(viii) SAMPLE HOLDING TIMES PRIOR TO ANALYSES IN CONFORMANCE WITH 40 CFR 136.3

☒ YES ☐ NO ☐ N/A

(ix) MONITORING AND ANALYSES BEING PERFORMED MORE FREQUENTLY THAN REQUIRED BY PERMIT.

☐ YES ☒ NO ☐ N/A

(x) IF (e) IS YES, RESULTS ARE REPORTED IN PERMITTEE'S SELF-MONITORING REPORT.

☐ YES ☐ NO ☒ N/A

## Part 3 - Laboratory (Further explanation attached \_\_\_\_\_)

PERMITTEE LABORATORY PROCEDURES MEET THE REQUIREMENTS AND INTENT OF THE PERMIT.

☒ YES ☐ NO ☐ N/A

DETAILS

(i) EPA APPROVED ANALYTICAL TESTING PROCEDURES USED. (40 CFR 136.3)

☒ YES ☐ NO ☐ N/A

(ii) IF ALTERNATE ANALYTICAL PROCEDURES ARE USED, PROPER APPROVAL HAS BEEN OBTAINED.

☐ YES ☐ NO ☒ N/A

(iii) PARAMETERS OTHER THAN THOSE REQUIRED BY THE PERMIT ARE ANALYZED.

☐ YES ☒ NO ☐ N/A

(iv) SATISFACTORY CALIBRATION AND MAINTENANCE OF INSTRUMENTS AND EQUIPMENT

☒ YES ☐ NO ☐ N/A

(v) QUALITY CONTROL PROCEDURES USED. EPA SAMPLES

☒ YES ☐ NO ☐ N/A

(vi) DUPLICATE SAMPLES ARE ANALYZED. \_\_\_\_\_ % OF TIME.

☒ YES ☐ NO ☐ N/A

(vii) SPIKED SAMPLES ARE USED. \_\_\_\_\_ % OF TIME. Sugar test

☒ YES ☐ NO ☐ N/A

(viii) COMMERCIAL LABORATORY USED.

☒ YES ☐ NO ☐ N/A

(ix) COMMERCIAL LABORATORY STATE CERTIFIED

☐ YES ☐ NO ☒ N/A

LAB NAME \_\_\_\_\_

LAB ADDRESS \_\_\_\_\_

RT 104196

PERMIT NO.

MF0000787

SECTION L - Effluent/Receiving Water Observations (Further explanation attached \_\_\_\_\_)

UTFALL NO.	OIL SHEEN	GREASE	TURBIDITY	VISIBLE FOAM	VISIBLE FLOAT SOL	COLOR	OTHER
001	NO	NO	yes	yes	NO	yes	—
002	NO	NO	NO	NO	NO	NO	

(Sections M and N: Complete as appropriate for sampling inspections)

SECTION M - Sampling Inspection Procedures and Observations (Further explanation attached \_\_\_\_\_)

- ☒ GRAB SAMPLES OBTAINED  
☒ COMPOSITE OBTAINED  
☒ FLOW PROPORTIONED SAMPLE  
☒ AUTOMATIC SAMPLER USED  
☐ SAMPLE SPLIT WITH PERMITTEE  
☐ CHAIN OF CUSTODY EMPLOYED  
☐ SAMPLE OBTAINED FROM FACILITY SAMPLING DEVICE

COMPOSITING FREQUENCY \_\_\_\_\_ PRESERVATION \_\_\_\_\_

SAMPLE REFRIGERATED DURING COMPOSITING: ☐ YES ☐ NO

SAMPLE REPRESENTATIVE OF VOLUME AND NATURE OF DISCHARGE \_\_\_\_\_

SECTION N - Analytical Results (Attach report if necessary)

Report ATTACHED

RT 104197

Survey Procedure

The flow and samples were obtained as follows:

<u>Sample Description</u>	<u>Flow Measurement</u>	<u>Sampling Methods</u>
030059 (001) samples collected at weir for lagoon discharge	Staff installed water level recorder on company 16.75" rectangular weir	Grab composite and individual grabs
030250 (002)	---	Submergible sampler and individual grabs

A water level recorder provides a continuous account of the liquid level or head above the crest of a weir or through a flume. A head versus time graph is obtained for the duration of the survey period. The total volume of wastewater over the weir or through the flume during the survey period is computed from the graph.

A submergible sampler obtains samples at a continuous rate.

Extractable organic composite samples are collected by the grab composite method.

A grab composite consists of a series of individual grabs composited into one sample.

An individual grab is a single instantaneous sample.

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

Samples were preserved according to Table 6. The results of the physical, chemical and bacteriological analyses are presented in Tables 1 & 2. Letter codes for laboratory results are defined in Table 6. A parameter listing for the organic scans is presented in Table 7. Unless otherwise specified, all parameters in the scan were analyzed.

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SWQD-Plainwell

RT 104198

Mead Paper Company

Table 1 Analyses of composite samples.

Outfalls	030059 (001)		030250 (002)
Survey Period	1-7-85 @ 1615		1-7-85 @ 1550
From	1-8-85 @ 1615		1-8-85 @ 1550
To			
Computed flow rate <sup>1</sup> (M <sup>3</sup> /day)	1600		---
	<u>mg/L</u>	<u>kg/day</u>	<u>mg/L</u>
Suspended solids	77	120	<4
Dissolved solids	---	---	330
BOD <sub>5</sub>	61	98	<3
CBOD <sub>5</sub>	57	91	<3
Ortho phosphate	0.07	0.1	---
TOC	57.	91	1.2
Nitrite & nitrate nitrogen-N	0.13 DS	0.21	0.06
Ammonia nitrogen-N	4.7	7.5	0.02
Kjeldahl nitrogen-N	12.	19	0.12
Total phosphorus-P	0.88	1.4	0.07
	<u>ug/L</u>	<u>kg/day</u>	<u>ug/L</u>
Total aluminum (Al)	410	0.66	<100
Total cadmium (Cd)	<20	---	<20
Total chromium (Cr)	<50	---	<50
Total copper (Cu)	<20	---	<20
Total nickel (Ni)	<50	---	<50
Total lead (Pb)	<50	---	<50
Total titanium (Ti)	210	0.34	170
Total vanadium (V)	<25	---	<25
Total zinc (Zn)	<50	---	<50
SCAN 3 - Chlorinated Hydrocarbons, PCB's & Organochlorine Pesticides	<0.12	---	<0.10
Dichlorobenzenes	<0.12	---	<0.10
Others	<0.01	---	<0.01
PCB	<0.12	---	<0.10
BP-6	<0.04 INT	---	<0.04 INT
2-Chloronaphthalene	<0.12		<0.10

Mead Paper Company

Table 2 Analyses of grab samples.

Date	Time	Flow <sup>1</sup> M <sup>3</sup> /day	Temp <sup>1</sup> °C	pH <sup>1</sup> S.U.	Cl <sup>1</sup> mg/l	Susp. solids mg/l	Diss. oxygen mg/l	BOD <sub>5</sub> mg/l	CBOD <sub>5</sub> mg/l	Nitrite & nitrate nitrogen mg/l	Ammonia nitrogen mg/l	Kjeldahl nitrogen mg/l
030059 (001)												
1-7-85	1630	1600	1.0	8.4	---	66	10.6	62	58	0.13 DS	4.1	12.
1-8-85	1120	1600	1.5	8.0	---	68	10.4	72	64	0.12 DS	4.5	11.
030250 (002)												
1-7-85	1550	---	15	8.2	U	---	8.1	---	---	---	---	---
1-8-85	1140	---	13.5	7.9	U	---	8.8	---	---	---	---	---

	Total phosphorus mg/l	O&G Grav mg/l	O&G I.R. mg/l
030059 (001)			
1-7-85 1630	0.92	<2	<1
1-8-85 1120	0.88	<2	<1
030250 (002)			
1-7-85 1550	---	<2	<1
1-8-85 1140	---	<2	<1

RT 104200

<sup>1</sup> - Values determined in the field at time of sampling

Mead Paper Company

Table 3 Comparison of survey results with the facility's NPDES Permit and Monthly Operating Report.

Parameter(Unit)	NPDES Permit Final Limitations		January Monthly Operating Report				Survey Results <sup>1</sup>
	Daily Average	Daily Maximum	Monthly Average	Monthly Maximum	1-7-85	1-8-85	
030059 (001)							
Flow (M <sup>3</sup> /day)	---	---	1,520	2,780	1,320	1,290	1,600 (1,600-1,600)
BOD <sub>5</sub> (kg/day)	295	591	146	233	87.1	103	98
Total suspended solids (kg/day)	295	591	---	---	24	31	120
Total phosphorus-P (mg/L)	---	---	0.92	1.25	---	---	0.88 (0.92, 0.88)
pH (S.U.)	Not <6.0 nor >9.0		---	8.0 Min 7.4	7.9	7.9	(8.4, 8.0)
030250 (002)							
Flow (M <sup>3</sup> /day)	---	---	1,640	1,640	---	---	---
Temperature (°C)	---	---	13.3	18.3	---	---	(15, 13.5)
pH (S.U.)	Not <6.0 nor >9.0		---	7.5 Min 7.4	---	---	(8.2, 7.9)

1 - Survey results are for the composite sample. Grab sample results are shown in parentheses ( ).  
 To obtain MGD multiply M<sup>3</sup>/day by 0.0002642.  
 To obtain lbs/day multiply kg/day by 2.205.  
 To obtain °F multiply °C by 1.8 and add 32.

RT 104201

Table 4 Comparison of the laboratory analytical results obtained by Mead Paper Company and the Environmental Protection Bureau from the split grab samples and comparison of independently obtained flow measurements.

Outfall	030059 (001)	
Sample Time & Date	1-8-85 @ 1120	
	<u>MEAD</u>	<u>EPB</u>
Flow <sup>1</sup> (M <sup>3</sup> /day)	1300	1600
	<u>mg/l</u>	
BOD <sub>5</sub>	67	72
Suspended solids	18	68
Total phosphorus	0.83	0.88

1 - 1 - Flow reported corresponds to the 24-hour sampling period.  
Company flow obtained from totalizer.

Mead Paper Company

Table 5 Comparison of the previous survey results with the results obtained in this survey.

Outfalls Survey Date    From To	030059 (001)		030250 (002)	
	5-18-82	1-7-85	5-18-82	1-7-85
	5-19-82	1-8-85	5-19-82	1-8-85
Flow Rate (M <sup>3</sup> /day)	3020	1600	---	---
	<u>mg/L</u>	<u>mg/L</u>	<u>mg/L</u>	<u>mg/L</u>
Suspended solids	29	77	---	---
Dissolved solids	---	---	320	330
BOD <sub>5</sub>	70.	61	2.2	<3
CBOD <sub>5</sub>	19.	57	---	---
TOC	36	57.	1.2	1.2
Nitrite & nitrate nitrogen-N	0.79	0.13	0.07	0.06
Ammonia nitrogen-N	9.0	4.7	0.06	0.02
Kjeldahl nitrogen-N	13.	12.	0.18	0.12
Total phosphorus-P	2.3	0.88	0.99	0.07
	<u>ug/L</u>	<u>ug/L</u>	<u>ug/L</u>	<u>ug/L</u>
Total aluminum (Al)	<1000	410	<1000	<100
Total cadmium (Cd)	<20	<20	<20	<20
Total chromium (Cr)	<50	<50	<50	<50
Total copper (Cu)	<20	<20	<20	<20
Total lead (Pb)	<50	<50	<50	<50
Total nickel (Ni)	<50	<50	<50	<50
Total zinc (Zn)	<50	<50	<50	<50

RT 104203

Table 6 Sample Preservation

<u>Parameter</u>	<u>Preservative</u>
TOC/Nutrients (Chlorine Absent)	5 drops conc. $H_2SO_4$ /250 ml (to pH <2).
D.O.	Fixed on site.
Total Metals	2 ml 1:1 $HNO_3$ /250 ml (to pH <2).
Oil & Grease	10 drops conc. $H_2SO_4$ /250 ml (to pH <2).
Base-neutral Extractables Purgeable Organics	Dechlorinated (if needed) with sodium thio- sulfate (1 drop 0.141 N/mg/l $Cl_2$ /250 ml).

Samples preserved as required, cooled to 4°C with chain of custody maintained.

Lab Letter Codes

DS - Sample was diluted due to other high values on a multi-channel analytical system.

ORGANIC SCAN PARAMETER LISTING

TABLE 7

SCAN 3 - Chlorinated Hydrocarbons, Polychlorinated Biphenyl & Organochlorine Pesticides

g-BHC (Lindane)	Hexachlorobutadiene
2-Chloronaphthalene	Hexachlorocyclopentadiene
1,2-Dichlorobenzene	Hexachloroethane
1,3-Dichlorobenzene	Octachlorocyclopentene
1,4-Dichlorobenzene	Pentachloronitrobenzene
Hexachlorobenzene	1,2,4-Trichlorobenzene
Aroclor 1242	4,4' - DDE
Aroclor 1254	1,4' - DDT
Aroclor 1260	4,4' - DDT
Aldrin	Heptachlor
BP-6 (PBB)	Heptachlor epoxide
a-Chlordane	Hexabromobenzene
g-Chlordane	Methoxychlor
4,4'-DDD	Mirex

Survey by: Chris Little, Water Quality Technician  
Joseph Hey, Water Quality Technician

Contact with Management: David Keith

Laboratory Analyses by: Environmental Protection Bureau Laboratory

Report by: Chris Little  
Point Source Studies Section  
Surface Water Quality Division  
Environmental Protection Bureau  
Michigan Department of Natural Resources

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SWQD-PTE. SOURCE

RT 104207

5-120-11

UNITED STATES DEPARTMENT OF AGRICULTURE  
 SOIL-WATER LABORATORY  
 WASHINGTON, D.C.

INSTRUMENT

EXAMINER

LINE	ELEMENT	SEC. 15	UNIT	ANALYST	DATE	QTY
1001	ALUMINUM		3	1001	1001	1001
1002	CADMIUM			1002	1002	1002
1003	CHROMIUM			1003	1003	1003
1004	COPPER			1004	1004	1004
1005	IRON			1005	1005	1005
1006	LEAD			1006	1006	1006
1007	MANGANESE			1007	1007	1007
1008	NICKEL			1008	1008	1008
1009	SILICA			1009	1009	1009
1010	SODIUM			1010	1010	1010
1011	SULFUR			1011	1011	1011
1012	TANTALUM			1012	1012	1012
1013	TIN			1013	1013	1013
1014	ZINC			1014	1014	1014

11/84

MATRIX = WATER

MICHIGAN DEPT OF NATURAL RESOURCES ENVIRONMENTAL LABORATORY  
ANALYSIS REQUEST SHEETYES / NO - INFO ON BACK  
\*\*\*\*\* SAFETY WARNING \*\*\*\*\*LAB 5379 PROJ SC COST 80555 PR 11 RECEIVED 11/19/85 DATE 11/19/85 10:10 AM  
LOG# CODE CENTER AT LAB TIME

LOCATION Mead Paper Co. COLLECTED BY Little/Hey

SAMPLE REMARKS SEND RESULTS TO Chris C. Little - SWED - PSS

LAB USE ONLY ! FIELD ID OR DESCRIPTION SAMPLE INFORMATION

44754 01 030059 (001) No Cl<sub>2</sub> 850107 1615

44755 02 030059-1 850107 1630

44756 03 030059-2 850108 1120

44757 04 030250 (002) No Cl<sub>2</sub> 850107 1550

44758 05 030250-1 850107 1550

44759 06 030250-2 850108 1140

07

08

09

10

ORGANIC INORGANIC GENERAL CHEMISTRY

P01 01 HALOCARBONS 1 2 3 4 5 6 7 8 9 10 MAD FIELD FILTER+PRES. 1 2 3 4 5 6 7 8 9 10 DO DISS OXYGEN 1 2 3 4 5 6 7 8 9 10

P02 02 AROMATIC HC 1 2 3 4 5 6 7 8 9 10 MD LAB FILTRATION 1 2 3 4 5 6 7 8 9 10

DBN 03 CL HC&amp;PEST. APCB 1 2 3 4 5 6 7 8 9 10 MA CA MB NA K 1 2 3 4 5 6 7 8 9 10 GN D-PHOS 1 2 3 4 5 6 7 8 9 10

04 04 PHENOLS 1 2 3 4 5 6 7 8 9 10 CD CR CU NI PB ZN 1 2 3 4 5 6 7 8 9 10 RES-NF (SS) 1 2 3 4 5 6 7 8 9 10

05 05 PNA 1 2 3 4 5 6 7 8 9 10 HB MERCURY 1 2 3 4 5 6 7 8 9 10 RES-TF (TDS) 1 2 3 4 5 6 7 8 9 10

06 06 SELENIUM 1 2 3 4 5 6 7 8 9 10 AS ARSENIC 1 2 3 4 5 6 7 8 9 10 BOD TOT 3 DAY 1 2 3 4 5 6 7 8 9 10

07 07 ANTIMONY 1 2 3 4 5 6 7 8 9 10 SB BOD CARB 5 DAY 1 2 3 4 5 6 7 8 9 10

08 08 OTHERS (CIRCLE) 1 2 3 4 5 6 7 8 9 10

09 09 AL AL BA BE CO FE 1 2 3 4 5 6 7 8 9 10 GA COD 1 2 3 4 5 6 7 8 9 10

10 10 LI MN MO TI V 1 2 3 4 5 6 7 8 9 10 TOC 1 2 3 4 5 6 7 8 9 10

FURNACE- CD 1 2 3 4 5 6 7 8 9 10 NO3+NO2 NH3 1 2 3 4 5 6 7 8 9 10

CR CU NI PB 1 2 3 4 5 6 7 8 9 10 KJEL N, TOT P 1 2 3 4 5 6 7 8 9 10

PHENOLICS 1 2 3 4 5 6 7 8 9 10

PH PH, CONDUCTANCE 1 2 3 4 5 6 7 8 9 10

CL SO4 TOTAL ALK 1 2 3 4 5 6 7 8 9 10

FLUORIDE 1 2 3 4 5 6 7 8 9 10

CR+6 1 2 3 4 5 6 7 8 9 10

HCO3- CO3 1 2 3 4 5 6 7 8 9 10

CA MG NA K -DISS. 1 2 3 4 5 6 7 8 9 10

MB BRINE (CIRCLE) 1 2 3 4 5 6 7 8 9 10

CL SO4 BR 1 2 3 4 5 6 7 8 9 10

ALK HCO3- CO3 1 2 3 4 5 6 7 8 9 10

CA MG NA K 1 2 3 4 5 6 7 8 9 10

CA CHLOROPHYLL 1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

RT 104209

4/84  
MATRIX = WATER

MICHIGAN DEPT OF NATURAL RESOURCES ENVIRONMENTAL LABORATORY  
ANALYSIS REQUEST SHEET

YES / NO - INFO ON BACK  
\*\*\*\*\* SAFETY WARNING \*\*\*\*\*

LAB 5379 PROJ SC COST 80555 PR II RECEIVED 1/9/85 DATE 10:10 AM  
LOG CODE CENTER AT LAB TIME 10:10 PM

LOCATION SAMPLED Meadow Paper Co. COLLECTED BY Little/Key TRANSFERRED TO 10/10/85

SAMPLE REMARKS SEND RESULTS TO (NAME & SECTION) Chris C. Little SWOD-PSS

LAB USE ONLY ! FIELD ID OR DESCRIPTION SAMPLE INFORMATION YY/MM/DD HH:MM

44754	01	030059	(001) No Cl <sub>2</sub>	850107	1615
44755	02	030059-1	↓	850107	1630
44756	03	030059-2	↓	850108	1120
44757	04	030250	(002) No Cl <sub>2</sub>	850107	1550
44758	05	030250-1	↓	850107	1550
44759	06	030250-2	↓	850108	1140
	07				
	08				
	09				
	10				

REC  
JAN 24 1985  
SWOD-PTE SOURCE

ORGANIC	INORGANIC	GENERAL CHEMISTRY
PO1 #1 HALOCARBONS.....1 2 3 4 5 6 7 8 9 10	MAD FIELD FILTER+PRES..1 2 3 4 5 6 7 8 9 10	DO DISS OXYGEN...1 2 3 4 5 6 7 8 9 10
PO2 #2 AROMATIC HC.....1 2 3 4 5 6 7 8 9 10	MD LAB FILTRATION.....1 2 3 4 5 6 7 8 9 10	GN O-PHOS...1 2 3 4 5 6 7 8 9 10
DBN #3 CL HC&PEST & PCB ① 2 3 ④ 5 6 7 8 9 10	MA CA MB NA K.....1 2 3 4 5 6 7 8 9 10	RES-NF (SS)...1 2 3 ④ 5 6 7 8 9 10
#6 PHTHALATES.....1 2 3 4 5 6 7 8 9 10	CD CR CU NI PB ZN.① 2 3 ④ 5 6 7 8 9 10	RES-TF (TDS)...1 2 3 ④ 5 6 7 8 9 10
#7 PNA.....1 2 3 4 5 6 7 8 9 10	HG MERCURY.....1 2 3 4 5 6 7 8 9 10	BOD TOT 5 DAY ① 2 3 ④ 5 6 7 8 9 10
.....1 2 3 ④ 5 6 7 8 9 10	AS ARSENIC.....1 2 3 4 5 6 7 8 9 10	BOD CARB 5 DAY ① 2 3 ④ 5 6 7 8 9 10
.....1 2 3 4 5 6 7 8 9 10	SE SELENIUM.....1 2 3 4 5 6 7 8 9 10	.....1 2 3 4 5 6 7 8 9 10
.....1 2 3 4 5 6 7 8 9 10	SB ANTIMONY.....1 2 3 4 5 6 7 8 9 10	
.....1 2 3 4 5 6 7 8 9 10	OTHERS (CIRCLE)	
CA #8 PHENOLS.....1 2 3 4 5 6 7 8 9 10	AB AL BA BE CD FE..1 2 3 4 5 6 7 8 9 10	GA COD.....1 2 3 4 5 6 7 8 9 10
	LI MN NO TI V.....1 2 3 4 5 6 7 8 9 10	TOC.....① 2 3 ④ 5 6 7 8 9 10
OB OIL & GREASE-IR...1 ② ③ ④ ⑤ ⑥ 7 8 9 10	FURNACE- CD.....1 2 3 4 5 6 7 8 9 10	NO3+NO2 NH3...① 2 ③ ④ 5 6 7 8 9 10
OIL & GREASE-BRAV..1 ② ③ ④ ⑤ ⑥ 7 8 9 10	CR CU NI PB.....1 2 3 4 5 6 7 8 9 10	KJEL N, TOT P.① 2 ③ ④ 5 6 7 8 9 10
		PHENOLICS.....1 2 3 4 5 6 7 8 9 10
	MN PH, CONDUCTANCE...1 2 3 4 5 6 7 8 9 10	.....1 2 3 4 5 6 7 8 9 10
	CL SO4 TOTAL ALK...1 2 3 4 5 6 7 8 9 10	
	FLUORIDE.....1 2 3 4 5 6 7 8 9 10	SB TOTAL CN.....1 2 3 4 5 6 7 8 9 10
	CR+6.....1 2 3 4 5 6 7 8 9 10	FREE CN.....1 2 3 4 5 6 7 8 9 10
	HCO3- CO3=.....1 2 3 4 5 6 7 8 9 10	
	CA MG NA K -DISS. 1 2 3 4 5 6 7 8 9 10	BC FECAL COLI....1 2 3 4 5 6 7 8 9 10
		TOTAL COLI.....1 2 3 4 5 6 7 8 9 10
	MB BRINE (CIRCLE)	.....1 2 3 4 5 6 7 8 9 10
	* CL SO4 BR 1 2 3 4 5 6 7 8 9 10	
	* ALK HCO3- CO3=..1 2 3 4 5 6 7 8 9 10	CA CHLOROPHYLL...1 2 3 4 5 6 7 8 9 10
	* CA MG NA K .....1 2 3 4 5 6 7 8 9 10	.....1 2 3 4 5 6 7 8 9 10

RT 104210

NICH DNR ENVIRONMENTAL LAB  
ORGANIC RESULTS FOR LAB LOG #5379  
=====

LAB# 44754

ug/L

SCAN 3

COMMENTS

~~Det limit PCB, dichlorobenzenes, 2-chloroph~~  
~~Detection limit all others~~

LAB# 44757

ug/L

SCAN 3

COMMENTS

~~Det limit PCB, dichlorobenzenes, 2-chloroph~~  
~~Detection limit all others~~

Unless noted above under COMMENTS, analyses were performed for the compounds on attached scan list. Concentrations are rounded to 2 significant figures.

Approved John Pale

JAN 22 1985

RT 104211

MICHIGAN DNR ENVIRONMENTAL LAB  
OIL & GREASE RESULTS

LAB LOG # 5379

LOCATION SAMPLED

Mead Paper Co.

SEND RESULTS TO

Chris Little - SWQD

REF. NO.	LAB SAMPLE NO.	OIL & GREASE FREON EXT.-IR MG/L 00560	OIL & GREASE FREON EXT.-GRAV. MG/L 00556	
01				
02	44755	<del>K1</del>	<del>K2</del>	
03	44756	<del>K1</del>	<del>K2</del>	
04				
05	44758	<del>K1</del>	<del>K2</del>	
06	44759	<del>K1</del>	<del>K2</del>	
07				
08				
09				
10				

COMMENTS:

APPROVED

John P. Park

JAN 22 1985

EL053

RT 104212

ORGANIC SCAN LIST

MATRIX: WATER

OCTOBER 1984

SCAN 1 - Purgeable Halocarbons

Bromodichloromethane	1,2-Dichloroethene (cis & trans)
Bromoform	1,2-Dichloropropane
Carbon tetrachloride	1,3-Dichloropropene (cis & trans)
Chlorobenzene	Methylene chloride (request only)
Chloroform	1,1,2,2-Tetrachloroethane
Dibromochloromethane	Tetrachloroethene
1,1-Dichloroethane	1,1,1-Trichloroethane
1,2-Dichloroethane	1,1,2-Trichloroethane
1,1-Dichloroethene	Trichloroethene

SCAN 2 - Purgeable Aromatic Hydrocarbons

Benzene	Toluene
Ethylbenzene	Xylene isomers (o, m, and p)
Styrene	

SCAN 3 - Chlorinated Hydrocarbons, PCBs & Organochlorine Pesticides

Aldrin	4,4'-DDT
*Aroclor 1016	1,2-Dichlorobenzene
*Aroclor 1221	1,3-Dichlorobenzene
*Aroclor 1232	1,4-Dichlorobenzene
Aroclor 1242	Heptachlor
*Aroclor 1248	Heptachlor epoxide
Aroclor 1254	Hexabromobenzene
Aroclor 1260	Hexachlorobenzene
*Aroclor 1262	Hexachlorobutadiene
*Aroclor 1268	Hexachlorocyclopentadiene
g-BHC (lindane)	Hexachloroethane
BP-6 (PBB)	Methoxychlor
a-Chlordane	Mirex
g-Chlordane	Octachlorocyclopentene
2-Chloronaphthalene	Pentachloronitrobenzene
4,4'-DDD	*Toxaphene
4,4'-DDE	1,2,4-Trichlorobenzene
1,4'-DDT	

RT 104213

SCAN 6 - Phthalate Esters & Polar Pesticides

Bis (2-ethylhexyl) phthalate	Di-n-octyl phthalate
Butyl benzyl phthalate	Dieldrin
Di-n-butyl phthalate	Endosulfan I
Diethyl phthalate	Endrin
Dimethyl phthalate	

SCAN 7 - Polynuclear Aromatic Hydrocarbons

Acenaphthene	Chrysene
Acenaphthylene	Dibenzo(a,h)anthracene
Anthracene	Fluoranthene
Benzo(a)anthracene	Fluorene
Benzo(b)fluoranthene	Indeno(1,2,3-cd)pyrene
Benzo(k)fluoranthene	Naphthalene
Benzo(ghi)perylene	Phenanthrene
Benzo(a)pyrene	Pyrene

SCAN 8 - Phenols

4-Chloro-3-methylphenol <sup>1</sup>	2-Nitrophenol
2-Chlorophenol	4-Nitrophenol
2,4-Dichlorophenol	Pentachlorophenol
2,4-Dimethylphenol	Phenol
2,4-Dinitrophenol	2,4,5-Trichlorophenol
2-Methyl-4,6-dinitrophenol <sup>2</sup>	2,4,6-Trichlorophenol

SCAN 9 - Aromatic Amines (method not validated)

Curene(4,4'-Methylene(bis)2-chloroaniline)  
3,3'-Dichlorobenzidine

\*Standards for these seldom encountered compounds are analyzed when their pattern is recognized. Results are coded as semi-quantitative (Type II).

<sup>1</sup>Reported as 4-Chloro-m-cresol

<sup>2</sup>Reported as 4,6-Dinitro-o-cresol

RECEIVED  
FEB 1 1985  
SWQD-PTE. SOURCE

Michigan Department of Natural Resources  
Environmental Laboratory  
Inorganic Unit

Log # 5379	Sampling Location: MEAD FAIR CO.	Matrix: WATER
	Send Results To: C. LITTLE, FSS	Received 85-01-09
	Proj Code SC SWQD COMPLIANCE	
	Lab # 44754 To 57	2 Samples
		Priority II
	Cost Code 00**0000000000000000	Approx Cost \$ 140.00

RT 104215

15-Jan-85

MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
ENVIRONMENTAL LABORATORY  
INORGANIC UNIT

EXAMINER *Nordlund*

LOG #	LAB #	ELEMENT	RESULTS	UNITS	ANALYSIS	MATRIX	RUN #
=====	=====	=====	=====	=====	=====	=====	=====
5379	44754	ALUMINUM	<del>1.0</del>	UG/L	TOTAL	WATER	00506
5379	44754	CADMIUM	<del>0.001</del>	UG/L	TOTAL	WATER	00504
5379	44754	CHROMIUM	<del>0.001</del>	UG/L	TOTAL	WATER	00504
5379	44754	COPPER	<del>0.001</del>	UG/L	TOTAL	WATER	00504
5379	44754	NICKEL	<del>0.001</del>	UG/L	TOTAL	WATER	00504
5379	44754	LEAD	<del>0.001</del>	UG/L	TOTAL	WATER	00504
5379	44754	TITANIUM	<del>0.001</del>	UG/L	TOTAL	WATER	00506
5379	44754	VANADIUM	<del>0.001</del>	UG/L	TOTAL	WATER	00506
5379	44754	ZINC	<del>0.001</del>	UG/L	TOTAL	WATER	00504
5379	44757	ALUMINUM	<del>1.0</del>	UG/L	TOTAL	WATER	00506
5379	44757	CADMIUM	<del>0.001</del>	UG/L	TOTAL	WATER	00504
5379	44757	CHROMIUM	<del>0.001</del>	UG/L	TOTAL	WATER	00504
5379	44757	COPPER	<del>0.001</del>	UG/L	TOTAL	WATER	00504
5379	44757	NICKEL	<del>0.001</del>	UG/L	TOTAL	WATER	00504
5379	44757	LEAD	<del>0.001</del>	UG/L	TOTAL	WATER	00504
5379	44757	TITANIUM	<del>0.001</del>	UG/L	TOTAL	WATER	00506
5379	44757	VANADIUM	<del>0.001</del>	UG/L	TOTAL	WATER	00506
5379	44757	ZINC	<del>0.001</del>	UG/L	TOTAL	WATER	00504



.....1 2 3 4 5 6 7 8 9 10      - ЛА АБ НА К .....1 2 3 4 5 6 7 8 9 10      1 2 3 4 5 6 7 8 9 10

**RT 104218**

**MATRIX = WATER**

2/84

LOCATION  
SAMPLED

COMMENTS

LAB NO.	OXYGEN	ORTH.P	NO2	RES-WF	RES-TF	BOD-5	BOD-5	TURB.	C.O.D.
	DISS	TOTAL	TOTAL	SS-105	TDS180	TOTAL	CARB	HACH	LOW
	MG/L	MG/L P	MG/L N	MG/L	MG/L	MG/L		FTU	MG/L
	00300	70507	00615	00530	70300	00310	MG/L	00076	00335

✓44	754	✗	107	77	✗	87	37	1
55	816		106	✓✗	82	38	2	
56	817		83	✓✗	72	39	3	
✓57	✗		84	30	✓83	33	4	
58	818		✗	✗	✗	✗	5	
59	818		✗	✗	✗	✗	6	
							7	
							8	
							9	
							10	

T.O.C.	N03+N02	N03	NH3	KJEL N	DRG N	PHOS.	PHENOL	CN	FECAL		
	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	T. REC	TOTAL	COLI		REF
MG/L	MG/L N	MG/L N	MG/L N	MG/L N	MG/L N	MG/L P	UG/L	MG/L	MF.		NO.
00680	00630	00620	00610	00625	00605	00665	32730	00720	31616		

57	13	47	12	788	1
X	13	91	13	92	2
X	13	15	16	88	3
X	13	100	12	87	4
X	X	X	X	X	5
X	X	X	X	X	6
					7
					8
					9
					10

Company Head - Otsego All outfalls No. 030016  
 Contact David Keith Address 431 Helen St., Otsego  
 Outfall No. 034659001 Description Process Flow 0.8MGD  
 Permit # MD0000787 Initial/Interim/Final Set up Last Survey Air probe at weir  
 Split Parameters BOD, SS, settleable solids, TMAP  
 Special Inst: \_\_\_\_\_  
 Pictures, map, filtering equip., bio sample \_\_\_\_\_

COMPOSITE  
 Organic: /Scan 3, 4, 5, 6, 7, 9, /8  
 Inorganic: MA  
Metal, Total Basic 6  
MAD  
Metal, Diss.  
MN  
Cr+6, Ions, Alk.  
 General Chemistry: S.S., D.S., BOD<sub>5</sub>, CBOD<sub>5</sub>, CBOD<sub>20</sub>, Nutrients OrthoP  
GA  
COD, TOC, Nutrients, Phenol GA  
GP GB S Inf: Tot. P.  
Phenol (Cl<sub>2</sub>)/Cyanide/Sulfide 1-7-85 1-7-85

Grab composite times of addition: 1 1630 / 1924 / 1 / 1 / 1

GRABS	1/24	<u>2/24</u>	3/24	4/24	5/24		
Sample #		<u>1</u>	<u>2</u>				
Date		<u>1-7-85</u>	<u>1-8-85</u>				
Time		<u>1630</u>	<u>1120</u>				
Est. Flow		<u>0.28</u>	<u>0.28</u>				
Temp.		<u>1.0</u>	<u>1.5</u>				
pH		<u>8.4</u>	<u>8.0</u>				
<del>BOD</del>							
<del>SS</del>							
<del>PP-2</del>							
<del>GB</del>							
<del>GA</del>							
OG		<u>✓</u>	<u>✓</u>				
DO		<u>✓</u>	<u>✓</u>				
<del>BA</del>							
<del>GB</del>							
<del>GN</del>							
GN SS, BOD, CBOD <sub>5</sub>		<u>✓</u>	<u>✓</u>				
GA Nuts		<u>✓</u>	<u>✓</u>				
GP							
GB							
<del>3</del>							
<del>4</del>							

Company Totalizer 525195 1525473 Factor X1250 = GALLONS

Set up type GC Start: 1615 End: \_\_\_\_\_ company

Field Comments: Reverse Side Sampling Location: At Lagoon 16.75 Rect weir

W.Q.T. Chris Little Engineer Gary Boersen

Company MOAD - Otego Address 431 Hark St. Otego  
 Contact \_\_\_\_\_  
 Outfall No. 030250(002) Description Cooling H<sub>2</sub>O Flow \_\_\_\_\_  
 Permit # LE0000787 Initial/Interim/Final Set up Last Survey GP on V-weir  
 Split Parameters NONE  
 Special Inst: \_\_\_\_\_  
 Pictures, map, filtering equip., bio sample \_\_\_\_\_

COMPOSITE  
 Organic: /Scan 3, <sup>OBN</sup>4, 5, 6, 7, 9, /8 <sup>OA</sup>  
 Inorganic: <sup>MA</sup>  
Metal, Total Boric  
<sup>MAD</sup>  
Metal, Diss.  
<sup>MN</sup>  
Cr+6, Ions, Alk.  
 General Chemistry: <sup>GN</sup>  
S.S. D.S., BOD<sub>5</sub>, CBOD<sub>5</sub>, CBOD<sub>20</sub>, Nutrients \_\_\_\_\_  
<sup>GA</sup>  
COD, TOC, Nutrients, Phenol \_\_\_\_\_  
<sup>GP</sup> <sup>GB</sup> <sup>S</sup>  
Phenol (Cl<sub>2</sub>)/Cyanide/Sulfide

Grab composite times of addition: / / / / / /

GRABS	1/24	2/24	3/24	4/24	5/24		
Sample #		1	2				
Date		1-7-85	1-8-85				
Time		1550	1140				
Est. Flow		-	-				
Temp.		15	13.5				
pH		8.2	7.9				
Cl <sub>2</sub>		u	u				
<del>PO<sub>4</sub>-P</del>							
<del>PO<sub>4</sub>-N</del>							
<del>OBN</del>							
<del>OG</del>							
<del>DO</del>							
<del>OG</del>							
<del>DO</del>							
<del>OG</del>							
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<del>DO</del>							
<del>OG</del>							
<del>DO</del>							
<del>OG</del>							
<del>DO</del>							
<del>OG</del>							
<del>DO</del>							

Company Totalizer \_\_\_\_\_ / \_\_\_\_\_ Factor \_\_\_\_\_

Set up type GC Start: 1550 End: \_\_\_\_\_

Field Comments: Reverse Side Sampling Location: \_\_\_\_\_

W.Q.T. Chris Little Engineer Patty Boesen

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JAN 28 1985  
SWQD-PIE: SOURCE

Department of Natural Resources  
Point Source Studies Section  
3005 Alpha Street  
Lansing, Michigan 48910  
Phone: (517) 373-2508  
Attention: GARY BOERSEN

RT 104222

OUTFALL(S)	DATE ANALYZED
TIME	
PARAMETER (UNIT)	
FLOW (MGD)	
BODs	
SUSP. SOLIDS	
SETT SOLIDS	
TOTAL Phos.	

Survey Procedure

The flow and samples were obtained as follows:

<u>Sample Description</u>	<u>Flow Measurement</u>	<u>Sampling Methods</u>
030059 (001) samples collected at weir for lagoon discharge	Staff installed water level recorder on company 16.75" rectangular weir	Grab composite and individual grabs
030250 (002)	---	Submergible sampler and individual grabs

A water level recorder provides a continuous account of the liquid level, or head above the crest of a weir or through a flume. A head versus time graph is obtained for the duration of the survey period. The total volume of wastewater over the weir or through the flume during the survey period is computed from the graph.

A submergible sampler obtains samples at a continuous rate.

Extractable organic composite samples are collected by the grab composite method.

A grab composite consists of a series of individual grabs composited into one sample.

An individual grab is a single instantaneous sample.

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

Samples were preserved according to Table 6. The results of the physical, chemical and bacteriological analyses are presented in Tables 1 & 2. Letter codes for laboratory results are defined in Table 6. A parameter listing for the organic scans is presented in Table 7. Unless otherwise specified, all parameters in the scan were analyzed.

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MAR 18 1985

SWQD-Plainwell

Mead Paper Company

Table 2 Analyses of grab samples.

Date	Time	Flow <sup>1</sup> M <sup>3</sup> /day	Temp <sup>1</sup> °C	pH <sup>1</sup> S.U.	Cl <sup>1</sup> mg/l	Susp. solids mg/l	Diss. oxygen mg/l	BOD <sub>5</sub> mg/l	CBOD <sub>5</sub> mg/l	Nitrite & nitrate nitrogen mg/l	Ammonia nitrogen mg/l	Kjeldahl nitrogen mg/l
<u>030059 (001)</u>												
1-7-85	1630	1600	1.0	8.4	---	66	10.6	62	58	0.13 DS	4.1	12.
1-8-85	1120	1600	1.5	8.0	---	68	10.4	72	64	0.12 DS	4.5	11.
<u>030250 (002)</u>												
1-7-85	1550	---	15	8.2	U	---	8.1	---	---	---	---	---
1-8-85	1140	---	13.5	7.9	U	---	8.8	---	---	---	---	---

		Total phosphorus mg/l	O&G Grav mg/l	O&G I.R. mg/l
<u>030059 (001)</u>				
1-7-85	1630	0.92	<2	<1
1-8-85	1120	0.88	<2	<1
<u>030250 (002)</u>				
1-7-85	1550	---	<2	<1
1-8-85	1140	---	<2	<1

\* 1 - Values determined in the field at time of sampling.

Mead Paper Company

Table 3 Comparison of survey results with the facility's NPDES Permit and Monthly Operating Report.

Parameter(Unit)	NPDES Permit Final Limitations		January Monthly Operating Report				Survey Results <sup>1</sup>
	Daily Average	Daily Maximum	Monthly Average	Monthly Maximum	1-7-85	1-8-85	
030059 (001)							
Flow (M <sup>3</sup> /day)	---	---	1,520	2,780	1,320	1,290	1,600 (1,600-1,600)
BOD <sub>5</sub> (kg/day)	295	591	146	233	87.1	103	98
Total suspended solids (kg/day)	295	591	---	---	24	31	120
Total phosphorus-P (mg/L)	---	---	0.92	1.25	---	---	0.88 (0.92, 0.88)
pH (S.U.)	Not <6.0 nor	>9.0	---	8.0 Min 7.4	7.9	7.9	(8.4, 8.0)
030250 (002)							
Flow (M <sup>3</sup> /day)	---	---	1,640	1,640	---	---	---
Temperature (°C)	---	---	13.3	18.3	---	---	(15, 13.5)
pH (S.U.)	Not <6.0 nor	>9.0	---	7.5 Min 7.4	---	---	(8.2, 7.9)

RT 104225

- 1 - Survey results are for the composite sample. Grab sample results are shown in parentheses ( ).  
 To obtain MGD multiply M<sup>3</sup>/day by 0.0002642.  
 To obtain lbs/day multiply kg/day by 2.205.  
 To obtain °F multiply °C by 1.8 and add 32.

Table 4 Comparison of the laboratory analytical results obtained by Mead Paper Company and the Environmental Protection Bureau from the split grab samples and comparison of independently obtained flow measurements.

Outfall	030059 (001)	
Sample Time & Date	1-8-85 @ 1120	
	<u>MEAD</u>	<u>EPB</u>
Flow <sup>1</sup> (M <sup>3</sup> /day)	1300	1600
	<u>mg/l</u>	
BOD <sub>5</sub>	67	72
Suspended solids	18	68
Total phosphorus	0.83	0.88

1 - 1 - Flow reported corresponds to the 24-hour sampling period.  
Company flow obtained from totalizer.

Mead Paper Company

Table 5    Comparison of the previous survey results with the results obtained in this survey.

Outfalls	030059 (001)		030250 (002)	
Survey Date    From	5-18-82	1-7-85	5-18-82	1-7-85
To	5-19-82	1-8-85	5-19-82	1-8-85
Flow Rate (M <sup>3</sup> /day)	3020	1600	---	---
	<u>mg/l</u>	<u>mg/l</u>	<u>mg/l</u>	<u>mg/l</u>
Suspended solids	29	77	---	---
Dissolved solids	---	---	320	330
BOD <sub>5</sub>	70.	61	2.2	<3
CBOD <sub>5</sub>	19.	57	---	---
TOC	36	57.	1.2	1.2
Nitrite & nitrate nitrogen-N	0.79	0.13	0.07	0.06
Ammonia nitrogen-N	9.0	4.7	0.06	0.02
Kjeldahl nitrogen-N	13.	12.	0.18	0.12
Total phosphorus-P	2.3	0.88	0.99	0.07
	<u>ug/l</u>	<u>ug/l</u>	<u>ug/l</u>	<u>ug/l</u>
Total aluminum (Al)	<1000	410	<1000	<100
Total cadmium (Cd)	<20	<20	<20	<20
Total chromium (Cr)	<50	<50	<50	<50
Total copper (Cu)	<20	<20	<20	<20
Total lead (Pb)	<50	<50	<50	<50
Total nickel (Ni)	<50	<50	<50	<50
Total zinc (Zn)	<50	<50	<50	<50

Table 6 Sample Preservation

<u>Parameter</u>	<u>Preservative</u>
TOC/Nutrients (Chlorine Absent)	5 drops conc. $H_2SO_4$ /250 ml (to pH <2).
D.O.	Fixed on site.
Total Metals	2 ml 1:1 $HNO_3$ /250 ml (to pH <2).
Oil & Grease	10 drops conc. $H_2SO_4$ /250 ml (to pH <2).
Base-neutral Extractables Purgeable Organics	Dechlorinated (if needed) with sodium thio- sulfate (1 drop 0.141 N/mg/l $Cl_2$ /250 ml).

Samples preserved as required, cooled to 4°C with chain of custody maintained.

Lab Letter Codes

DS - Sample was diluted due to other high values on a multi-channel analytical system.

ORGANIC SCAN PARAMETER LISTING

TABLE 7

SCAN 3 - Chlorinated Hydrocarbons, Polychlorinated Biphenyl & Organochlorine Pesticides

g-BHC (Lindane)	Hexachlorobutadiene
2-Chloronaphthalene	Hexachlorocyclopentadiene
1,2-Dichlorobenzene	Hexachloroethane
1,3-Dichlorobenzene	Octachlorocyclopentene
1,4-Dichlorobenzene	Pentachloronitrobenzene
Hexachlorobenzene	1,2,4-Trichlorobenzene
Aroclor 1242	4,4' - DDE
Aroclor 1254	1,4' - DDT
Aroclor 1260	4,4' - DDT
Aldrin	Heptachlor
BP-6 (PBB)	Heptachlor epoxide
a-Chlordane	Hexabromobenzene
g-Chlordane	Methoxychlor
4,4'-DDD	Mirex

Survey by: Chris Little, Water Quality Technician  
Joseph Hey, Water Quality Technician

Contact with Management: David Keith

Laboratory Analyses by: Environmental Protection Bureau Laboratory

Report by: Chris Little  
Point Source Studies Section  
Surface Water Quality Division  
Environmental Protection Bureau  
Michigan Department of Natural Resources

RT 104230

# MICHIGAN ENVIRONMENTAL PROTECTION

# REPORT

## Kalamazoo River PCB Study

December 17, 1984

Contact: William Creal  
Department of Natural Resources  
Surface Water Quality Division  
P.O. Box 30028  
Lansing, Michigan 48909  
517/373-2867

The Michigan Department of Natural Resources (DNR) is proposing to initiate a study under Act 307, the Michigan Environmental Response Act, on the Kalamazoo River, to determine the extent of Polychlorinated Biphenyl (PCBs) contamination, and to identify means of effectively resolving any public health or environmental concerns. Periodic reports will be issued by the DNR to ensure that area residents are kept informed of study progress and results.

### PUBLIC MEETINGS SCHEDULED

PUBLIC MEETINGS HAVE BEEN SCHEDULED FOR TUESDAY, JANUARY 8, 1985 AT 7:30 P.M. IN THE KALAMAZOO CITY HALL CHAMBERS AND THURSDAY, JANUARY 10, 1985 IN THE CITY OF ALLEGAN'S GRISWOLD AUDITORIUM.

Staff from the Michigan Department of Natural Resources will discuss with area residents the current status of the attached summarized work plan. Your review and comments are welcome.

### BACKGROUND

This project will evaluate various options to cleanup the PCB contamination in the Kalamazoo River. The goal of the project is to reduce fish tissue PCB concentrations so that the fish consumption advisory can be removed. Further meetings will be held midway through the project (summer, 1985) and upon completion (January, 1986).

### Work Plan for Kalamazoo PCB Feasibility Study

- I. General Objective: Determine the cause of fish PCB contamination and the most cost-effective, environmentally sound and socially acceptable way to reduce fish PCB concentrations to less than 2 mg/kg.
- II. Specific Objectives:
  - A. Define pathway of fish PCB contamination
  - B. Identify viable remedial measures to reduce fish PCB concentrations
  - C. Determine the length of time for fish PCB concentrations to be less than 2 mg/kg with no remedial actions.
  - D. Determine the significance on fish PCB concentrations of various remedial actions.

Department of Natural Resources  
Environmental Protection Bureau  
Box 30028  
Lansing, Michigan 48909

RT 104231



### III. Tasks

- A. Development of a model to predict PCB trends in water, sediment and fish. The goal of the model is to evaluate the fate and distribution of PCBs in order to assess fish PCB concentration and the impact of various remedial measures.
- B. Identification of data needs for model: Necessary data inputs need to be identified by March, 1985 so sampling arrangements and procedures can be agreed upon and implemented.
- C. Identify viable remedial measures to reduce fish PCB concentrations. As a minimum, remedial measures considered should include: (1) removal of DNR owned dams; (2) dredging Portage Creek; (3) dredging Lake Allegan; (4) stabilizing sediments behind DNR owned dams; (5) isolating highly contaminated areas.
- D. Evaluate the impact of each remedial action on fish PCB concentrations relative to no action. This evaluation should also estimate the cost and likelihood of implementation.
- E. Identify a preferred alternative to correct the fish PCB contamination and options for implementation.

### IV. Cost of Project: \$160,000

- A. Funded under Federal Clean Water Act and Michigan Environmental Response Act.
- B. Contracted to NUS Corporation

### V. Completion Date: January-March, 1986

mead

Central Research  
8th & Hickory Streets  
Chillicothe, Ohio 45601

Telephone: 614-772-3503

To: M. L. Knapp  
B. Cichon ✓  
Otsego

October 2, 1984

From: W. L. Lapp


Re: Final Effluent PCB Analysis

Attached is the report from CompuChem submitting the results of the final effluent PCB analysis for the sample collected on August 22, 1984.

The results indicate that PCBs were not present in detectable concentrations in the mill's final discharge effluent stream.

Based upon the raw wastewater and final effluent samples collected on August 22, 1984, the mill is not discharging PCB compounds above the 3 µg/l concentration set as an upper limit in U.S. EPA rulemaking earlier this summer.

If there are any questions or comments, please call.

  
W. L. Lapp

WLL/cg

cc: File: AW-11.3W

Attachment.

RT 104233



V.L.L. 12 11

September 25, 1984

Mr. David Briar  
Mead Paper  
8th & Hickory Street  
Chillicothe, OH 45601

Dear Mr. Briar:

Thank you for selecting CompuChem® Laboratories for your recent sample analysis. We have completed the analysis that you requested and have enclosed a summary of the CompuChem® data for your review. Additional data details are available for purchase if you require them.

As you know, EPA has proposed detection limits for the priority pollutants in the December 3, 1979, Federal Register, and we have reported all priority pollutant concentrations which have exceeded these limits (or their equivalent for solid matrices). In addition, we have permanently stored a complete record of your data on magnetic tape. This includes chromatograms, mass spectra, calibration and quality control data for the organics. Therefore, your original data is readily available for future reference. Should you require additional information from your data base, please contact us at 1/800-334-8525.

In order to expedite data to you, we have forwarded the results for all completed analyses. If you submitted more samples than are included in the enclosed results, the data will be forthcoming upon completion of our final review.

Your confidence in our CompuChem® service is appreciated. We look forward to a continuing association.

Sincerely,

Customer Service Dept.  
CompuChem®

Enclosure:

Report: FINAL EFFLUENT - 34204

RT 104234

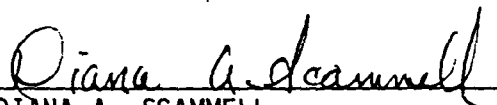
REPORT OF DATA

SAMPLE IDENTIFIER: FINAL EFFLUENT

COMPUCHEM SAMPLE NUMBER: 34204

SUBMITTED TO:

Mr. David Briar  
Mead Paper  
8th & Hickory Street  
Chillicothe, OH 45601

  
DIANA A. SCAMMELL  
TECHNICAL SPECIALIST, OPERATIONS

R. L. MYERS, PH.D., PRESIDENT

ROBERT E. MEIERER  
DIRECTOR OF QUALITY ASSURANCE

RT 104235

LABORATORY CHRONICLE

SAMPLE IDENTIFIER: FINAL EFFLUENT  
COMPUCHEM SAMPLE NUMBER: 34204

	<u>Date</u>
Received/Refrigerated	08/23/84
Organics	
Extracted	
- PCBS	09/04/84
Analyzed	
1. Volatiles	Not Requested
2. Acids	Not Requested
3. Base/Neutrals	Not Requested
4. Pesticides/ <u>PCBS</u>	09/07/84
Inorganics	
1. Metals	Not Requested
2. Cyanide	Not Requested
3. Phenol	Not Requested

SAMPLE IDENTIFIER: FINAL EFFLUENT  
COMPUCHEM SAMPLE NUMBER: 34204

PESTICIDES/PCB'S	CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
1P. PCB-1242	BDL	0.1
2P. PCB-1254	BDL	0.1
3P. PCB-1221	BDL	0.1
4P. PCB-1232	BDL	0.1
5P. PCB-1248	BDL	0.1
6P. PCB-1260	BDL	0.1
7P. PCB-1016	BDL	0.1

*note detection  
limit.*

BDL=BELOW DETECTION LIMIT

RT 104237

Mead

Central Research  
8th & Hickory Streets  
Chillicothe, Ohio 45601

Telephone: 614-772-3503

To: M. L. Knapp  
B. Cichon ✓  
Otsego

September 25, 1984

From: W. L. Lapp


Re: Effluent PCB Results

Attached are the PCB results from the mill's raw effluent (influent to primary clarifier) collected by the mill on August 22, 1984, and submitted to CompuChem for analysis.

The results indicate that PCBs are not present in detectable concentrations in the mill's raw wastewater stream.

You will recall that the reason for this sampling and analysis was because the U.S. EPA, earlier this summer, issued final rulemaking which placed a limitation of 3 µg/l as the upper limitation of PCB compounds in effluent streams.

If there are any questions or comments, please call.

  
W. L. Lapp

WLL/cg

cc: File: AW-11.3W

Attachment.

RT 104238



September 20, 1984

Mr. David Briar  
Mead Paper  
8th & Hickory Street  
Chillicothe, OH 45601

Dear Mr. Briar:

Thank you for selecting CompuChem® Laboratories for your recent sample analysis. We have completed the analysis that you requested and have enclosed a summary of the CompuChem® data for your review. Additional data details are available for purchase if you require them.

As you know, EPA has proposed detection limits for the priority pollutants in the December 3, 1979, Federal Register, and we have reported all priority pollutant concentrations which have exceeded these limits (or their equivalent for solid matrices). In addition, we have permanently stored a complete record of your data on magnetic tape. This includes chromatograms, mass spectra, calibration and quality control data for the organics. Therefore, your original data is readily available for future reference. Should you require additional information from your data base, please contact us at 1/800-334-8525.

In order to expedite data to you, we have forwarded the results for all completed analyses. If you submitted more samples than are included in the enclosed results, the data will be forthcoming upon completion of our final review.

Your confidence in our CompuChem® service is appreciated. We look forward to a continuing association.

Sincerely,

Customer Service Dept.  
CompuChem®

Enclosure:

Report: RAW EFFLUENT - 34207

RT 104239

*Rec 9-24-84*

REPORT OF DATA

SAMPLE IDENTIFIER: RAW EFFLUENT

COMPUCHEM SAMPLE NUMBER: 34207

SUBMITTED TO:

Mr. David Briar  
Mead Paper  
8th & Hickory Street  
Chillicothe, OH 45601

  
DIANA A. SCAMMELL  
TECHNICAL SPECIALIST, OPERATIONS

R. L. MYERS, PH.D., PRESIDENT

ROBERT E. MEIERER  
DIRECTOR OF QUALITY ASSURANCE

## LABORATORY CHRONICLE

SAMPLE IDENTIFIER: RAW EFFLUENT  
COMPUCHEM SAMPLE NUMBER: 34207

	<u>Date</u>
Received/Refrigerated	08/23/84
Organics	
Extracted	09/04/84
Analyzed	
1. Volatiles	Not Requested
2. Acids	Not Requested
3. Base/Neutrals	Not Requested
4. Pesticides/ <u>PCBS</u>	09/07/84
Inorganics	
1. Metals	Not Requested
2. Cyanide	Not Requested
3. Phenol	Not Requested

RT 104241

SAMPLE IDENTIFIER: RAW EFFLUENT  
COMPUCEM SAMPLE NUMBER: 34207

PESTICIDES/PCB'S	CONCENTRATION (UG/L)	DETECTION* LIMIT (UG/L)
1P. PCB-1242	BDL	1.0
2P. PCB-1254	BDL	1.0
3P. PCB-1221	BDL	1.0
4P. PCB-1232	BDL	1.0
5P. PCB-1248	BDL	1.0
6P. PCB-1260	BDL	1.0
7P. PCB-1016	BDL	1.0

BDL=BELOW DETECTION LIMIT

\*Sample analyzed using a 10:1 dilution to properly evaluate the GC Chromatogram, thus the higher than normal detection limits.

Table 6 Sample Preservation

Parameter	Preservative
COD	10 drops conc. $H_2SO_4$ /250 ml (to pH <2).
Total Metals	2 ml 1:1 $HNO_3$ /250 ml (to pH <2).
Oil & Grease	10 drops conc. $H_2SO_4$ /250 ml (to pH <2).
All samples cooled to 4°C upon collection and chain of custody maintained.	

Survey by: Martin Rock, Sanitary Engineer  
William Long, Water Quality Investigator  
Joseph Hey, Water Quality Investigator

Contact with Management: David Keith, Certified Operator  
Jerome Stoltz

Hydrocarbon Analyses by: Environmental Protection Bureau Laboratory

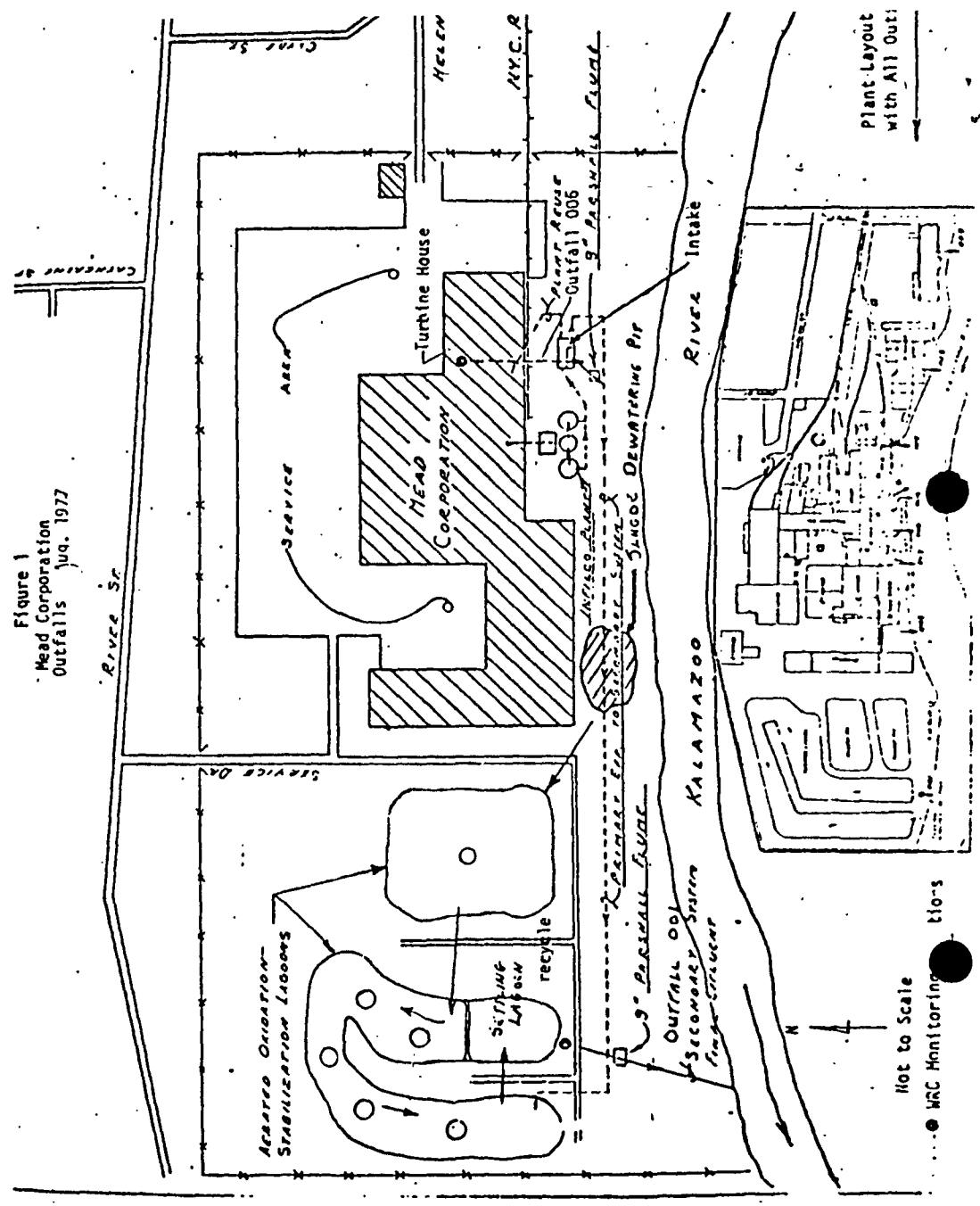
Physical & Chemical Analyses by: Environmental Protection Bureau Laboratory

Report by: Martin Rock  
William Long  
Point Source Studies Section  
Environmental Services Division  
Environmental Protection Bureau  
Michigan Department of Natural Resources

Distribution "A"  
MM

RT 104281

Figure 1  
Head Corporation  
Outfalls July 1977





MEMO

March 15, 1982

TO: Mr. R. G. Stevenson

cc: Mr. D. H. Marcero  
Mr. J. A. Mentch

FROM: L. R. McDonnold

SUBJECT: PCB Testing of Rand McNally Paper from Otsego

The tests are complete on the sample of M03986 Rand McNally paper for detection of PCB.

As you can see from the attached laboratory report, the PCB content was below the limits of detection indicated at the bottom of the report.

A handwritten signature in cursive script, appearing to read "L. R. McDonnold".

L. R. McDonnold  
Product Safety Engineer  
Human & Environmental Protection Depart.

LRM/deb

Attachment

RT 104282

mead

MAR 8 1982  
Central Research  
8th & Hickory Streets  
Chillicothe, Ohio 45601

Telephone: 614-772-3503

To: L. R. McDonnold  
Dayton

March 1, 1982

From: B. A. Hurley

Re: PCB Testing on Paper From Otsego

Attached are data for the analysis of M-03986 Rand McNally Paper for PCB content as requested by Robert Stevenson.

Respectfully submitted,

Beth A. Hurley  
Beth A. Hurley

BAH/cg

cc: AW-11.3P

Attachment.

RT 104283

# LABORATORY ANALYSIS REPORT



CORPORATE HUMAN & ENVIRONMENTAL PROTECTION DEPARTMENT

## PRODUCT SAFETY CHEMICAL DATA SHEET

Date Received: 11/20/81  
Operation: Mead Paperboard Products  
Contact: Robert Stevenson

### RESULTS

SAMPLE NUMBER	ANALYSIS REQUESTED	Conc	Conc	Conc	
		Arochlor 1242	Arochlor 1254	Arochlor 1260	
		(ppm-wt.)	(ppm-wt.)	(ppm-wt.)	
PO 22 Oak 40/60 Furnish Mfg 11/10/81 (7-3) 2:49 MO3986 Rand McNally AD System Off Otsego Mill	Polychlorinated Biphenyls (PCB)	N.D.	N.D.	N.D.	

COMMENTS: Method of Analysis: Hexane Extraction and ECD Gas Chromatography

Analytical Limits of Detection:

Arochlor 1242 = 0.25 ppm-wt.  
Arochlor 1254 = 0.53 ppm-wt.  
Arochlor 1260 = 0.25 ppm-wt.

RT 104284

Respectfully submitted,

*Beth Hurley*



V-15

NATURAL RESOURCES COMMISSION

JACOB A. HOEFER  
E. M. LAITALA  
HILARY F. SNELL  
PAUL H. WENDLER  
HARRY H. WHITELEY  
JOAN L. WOLFE  
CHARLES G. YOUNGLOVE

WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

HOWARD A. TANNER, Director  
State Office Building  
350 Ottawa N. W.  
Grand Rapids, Michigan 49503  
Phone: 456-6232

December 28, 1982

Mr. Michael Knapp  
Mead Corporation  
431 Helen St.  
Otsego, MI 49078

Dear Mr. Knapp:

Enclosed are two copies of the "Report of An Industrial Wastewater Survey" conducted at the Mead facility on May 18-19, 1982. Flow measurements, as well as chemical analysis of composite and grab samples, are listed in this report.

The survey results indicate the company was meeting the discharge limitations of the NPDES Permit (MI 0000787).

A grab sample was split with the company. The suspended results compared well, but the company reported a BOD<sub>5</sub> value which was 38% below that reported by the DNR laboratory.

At Outfall 001 the following parameters have increased since last year's survey: flow, BOD<sub>5</sub>, nitrite and nitrate nitrogen-N, and total phosphorus-P. The water quality limit for total phosphorus-P in a discharge would be 2 mg/l. The results at Outfall 002 indicated a decrease in most parameters, including flow, suspended solids, dissolved solids, Kjeldahl nitrogen-N, and chlorides.

Again this year during the survey the company was experiencing a bypass to the Outfall 002 channel. Outfall 002 is permitted for the discharge of noncontact cooling water only. The company has experienced a number of illegal discharges into this channel. It is imperative that steps be taken to eliminate the possibility of these overflows. Plans developed to correct the situation should be submitted to this office for review. A meeting may be necessary to discuss the adequacy of the plans prior to implementation.

Comments regarding the survey results and the requested plans should be received by January 31, 1983. If you have questions regarding the above matters, feel free to contact me at this office.

Sincerely,

WATER QUALITY DIVISION

*Marge Spruit*

Marge Spruit  
Water Quality Specialist

MS/mam

CC: WQD Files, Lansing

RT 104243

S. Ross, Compliance Section, Water Quality Division

M. Rock, Point Source Survey, Water Quality Division

MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
ENVIRONMENTAL PROTECTION BUREAU  
POINT SOURCE STUDIES SECTION

Report of an  
Industrial Wastewater Survey  
Conducted at  
MEAD CORPORATION  
All Outfalls No. 030016  
NPDES Permit No. M10000787  
Allegan County  
Otsego, Michigan  
May 18-19, 1982

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Tuesday, May 18, 1982.

The results of this survey met the final limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. M10000787 (Table 3).

The survey results were compared to the plant's Monthly Operating Report (MOR) results for May 1982. The survey results for temperature at outfall 030250 (002) were greater than the MOR monthly maximum (Table 3).

One grab sample from outfall 030059 (001) was split with the plant for comparison of analytical results. The results did not compare well for BOD<sub>5</sub>. The plant reported a value 38% below that reported by the Environmental Protection Bureau Laboratory (Table 4).

The results from this survey were compared to those of the previous survey conducted in September 1981. The results from this survey were greater for BOD<sub>5</sub> and total phosphorus-P at outfall 030059 (001) and were lesser for chlorides at outfall 030250 (002) (Table 5).

Plant Processes

Mead Paper Company produces multi-ply paperboard for the publishing, furniture, mobile home and automotive industries. The mill's operation during the survey was 24 hours per day, 5-6 days per week employing about 170 people. Production during the survey was considered 20% below normal.

The mill receives baled secondary fibers (scrap paper) by rail and truck. This scrap paper is dumped into a hydropulper, sent through a cleaner, thickened, refilled and put onto the 8-cylinder paper machine. There is no deinking. The paper off the machine is laminated up to 5 plies (1/4 inch). Laminated sheets are then cut and packed for shipping.

Water Supply, Wastewater & Treatment

The Mead Paper Company, Otsego Mill obtains process, cooling and domestic water from four operating wells which each have a 100,000 gallon per hour capacity. Water from the Kalamazoo River is used during a start up operation to fill the chests. The amount of river water needed during a start up ranges from 25,000 to 100,000 gallons and there is at least one start up per week under the current production scheme. The domestic water for the mill's office is supplied by the City of Otsego. Water used on the paper machines is chlorinated (200 lbs. chlorine/day) at the vats for slime control. The boiler water is treated using hot lime softening.

Wastewater due to boiler blowdown, water softener backwash, compressor cooling and condensate, stock preparation, the paper machine, spills and tank overflows, plant equipment cleanup, floor drains and some surface runoff is pumped to two Infilco clarifiers operating in parallel. The clarifiers are each 50 feet in diameter and have a 15 foot side wall depth which gives a nominal retention time of 4.2 hours at a flow rate of 2.5 MGD. (If flow in the sewer leading to the clarifiers is high the sewer may discharge directly to the Kalamazoo River without treatment.) Sludge from the clarifiers and 60 to 80% of the effluent from the clarifiers is recycled back into the mill.

The remaining wastewater from the primary treatment system is pumped to two aerated lagoons which are operated in series. The first lagoon has a length of 264 feet, a width of 250 feet and an average depth of about six feet and is equipped with three aerators which provide a total of 110 horsepower. The second lagoon is L-shaped, has a total surface area of 2.75 acres and has an average depth of about four feet. It is equipped with six aerators and provides a total of 120 horsepower. The two aerated lagoons are followed by a 3/4 acre settling lagoon. The settling lagoon discharges through the plant's nine inch Parshall flume to the Kalamazoo River via outfall 030059 (001).

Cooling waters used in the turbine house for cooling bearings, the air compressors, steam condensers, and bearings on the turbines and feed water pumps are about 50% recycled. The discharged cooling waters combine with floor drainage and are discharged through an oil skimmer to the Kalamazoo River via outfall 030159 (002). Domestic wastewater from the office is discharged to the City of Otsego sanitary sewer system.

A water flow diagram is given in Figure 3. A diagram of the plant grounds and a map showing plant location are given in Figures 1 and 2 respectively.

RT 104244

Survey Procedure

The flows and samples were obtained as follows:

Sampling Location	Flow Measurement	Sampling Methods
030059 (001)	Staff installed water level recorder on company's rectangular weir.	Automatic air activated, grab composite and individual grabs. All samples taken at lagoon overflow gate.
030250	Staff installed water level recorder on company's 90° V-notch weir.	Grab composite and individual grabs taken at company weir.

A water level recorder provides a continuous account of the liquid level or head above the crest of a weir. A head versus time graph is obtained for the duration of the survey period. The total volume of wastewater over the weir during the survey period is computed from the graph.

An automatic sampler composites samples at timed intervals. Samples may be proportional to the instantaneous flow over the weir.

Extractable organic composite samples are collected by the grab composite method.

A grab composite consists of a series of individual grabs composited into one sample.

An individual grab is a single instantaneous sample.

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

Samples were preserved according to Table 6. The results of the physical, chemical and bacteriological analyses are presented in Tables 1 & 2. Letter codes for laboratory results are defined in Table 6.

Mead Corporation - Otsego

Table 1 Analyses of composite samples.

Outfalls Survey Period	From To	030059 (001) 5-18-82 - 1620 5-19-82 - 1620		030250 5-18-82 - 1515 5-19-82 - 1515	
		Computed flow rate <sup>1</sup> (M <sup>3</sup> /day)			
		3,020		769	
		mg/l	kg/day	mg/l	kg/day
Suspended solids		29	88	4	--
Dissolved solids		640	1,900	320	253
Settleable solids		< 4	--	--	--
COD		140	420	3	2
TOD		36	110	1.2	0.92
BOD <sub>5</sub>		70	210	2.2	1.7
CBOD <sub>2</sub>		11	33	--	--
CBOD <sub>5</sub>		19	57	--	--
CBOD <sub>8</sub>		34	100	--	--
CBOD <sub>12</sub>		38	110	--	--
CBOD <sub>15</sub>		39	120	--	--
CBOD <sub>20</sub>		57	170	--	--
Nitrite & nitrate nitrogen-N		0.79	2.4	0.07	0.05
Ammonia nitrogen-N		9.0	30	0.06	0.05
Kjeldahl nitrogen-N		13	39	0.18	0.14
Total phosphorus-P		2.3	6.9	0.09	0.75
Chlorides		59	180	15.9	12.2
Sulfate (SO <sub>4</sub> )		74	220	36	28
Alkalinity (as CaCO <sub>3</sub> )		345	--	220	--
		ug/l		ug/l	
Phenol		12 MA	0.036	< 2 MA	--
Total cadmium (Cd)		< 20	--	< 20	--
Total chromium (Cr)		< 50	--	< 50	--
Total copper (Cu)		< 20	--	< 20	--
Total nickel (Ni)		< 50	--	< 50	--
Total lead (Pb)		< 50	--	< 50	--
Total zinc (Zn)		< 50	--	< 50	--
Total aluminum (Al)		< 1,000	--	< 1,000	--
Phthalate Esters & Polar Pesticides					
Bis(2-ethylhexyl)phthalate		4.3	0.013	--	--
Other		< 1	--	--	--
Chlorinated Phenols					
Pentachlorophenol		< 50	--	< 50	--
Others		U (<20)	--	U (<20)	--

1 - Flow rates used in the computation of kg/day.  
To obtain MGD multiply M<sup>3</sup>/day by 0.0002642  
To obtain lbs/day multiply kg/day by 2.205

RT 104245

Table 2 Analyses of grab samples.

Date	Time	Temp. °C	pH S.U.	Residual Chlorine mg/l	Susp. solids mg/l	Diss. solids mg/l	Settle solids mg/l	COD mg/l	TOC mg/l	Nitrite & nitrate nitrogen mg/l	Ammonia nitrogen mg/l	Feldahl nitrogen mg/l
030059 (001)												
5-18-82	1620	23.5	8.1	U	26	630	< 4	140	39	1.0 DL	7.4	12.
5-18-82	2110	23.5	8.1	--	20	650	< 4	140	33	1.1 DL	7.6	12
5-19-82	0915	21.5	8.0	U	22	640	< 4	140	37	0.74 DL	8.5	1
030250												
5-18-82	2050	36.0	8.0	U	--	--	--	< 3	1.2	0.06	0.08	0.20
5-19-82	0850	19.0	8.0	U	--	--	--	< 3	1.2	0.07	0.02	0.15

	Total phosphorus-P mg/l	DOOs mg/l	OSG I.R. mg/l	OSG Grav. mg/l	Phenols ug/l
030059 (001)					
5-18-82 1620	2.2	62.	< 1	< 2	6 HA
5-18-82 2110	2.2	60.	< 1	< 2	7 HA
5-19-82 0915	2.3	58.	< 1	< 2	5 HA
030250					
5-18-82 2050	0.82	--	2	2	2 HA
5-19-82 0850	1.0	--	< 1	< 2	< 2 HA

	Scan #1 Purgeable Halocarbons			Scan #2 Purgeable Aromatic Hydrocarbons	
	1,2-Dichloro- propane ug/l	Trichloro- ethene ug/l	Tetrachloro- ethene ug/l	Other ug/l	
030059 (001)					
5-18-82 1620	< 1	< 1	< 1	U (<10)	
5-18-82 2110	< 1	< 1	< 1	U (<10)	
5-19-82 0915	Int	Int	< 1	U (<10)	
030250					
5-18-82 2050	Int	Int	< 1	U (<10)	
5-19-82 0850	Int	Int	1.50	U (<10)	

1 - Values determined in the field at time of sampling.

## Mead Corporation - Otsego

Table 3 Comparison of survey results with the facility's NPDES Permit and Monthly Operating Report.

Parameter (Unit)	NPDES Permit Final Limitations		May Monthly Operating Report				Survey Results <sup>1</sup>
	Daily Average	Daily Maximum	Monthly Average	Monthly Maximum	5-18-82	5-19-82	
030059 (001)							
Flow (M <sup>3</sup> /day)	--	--	2,410	3,640	2,780	3,020	3,020
Settleable solids (mg/l)	--	--	5	16	0	6	< 4 (<4, <4, <4)
Suspended solids (kg/day)	295	591	100	225	122	35	88
BOD <sub>5</sub> (kg/day)	295	591	147	283	156	175	210
pH (S.U.)	not <6.0 nor >9.0		--	7.9 min. 7.6	7.7	7.7	(8.1, 8.1, 8.0) $\frac{1}{2}$
030250							
Flow (M <sup>3</sup> /day)	--	--	1,660	1,660	--	--	769
Oil & Grease (visual) (mg/l)	0 - 4 quantitative analysis not required	--	0	1	--	--	-- (2, <2)
Temperature (°C)	--	--	16.0	17.0	--	--	(36.0, 19.0)
pH (S.U.)	not <6.0 nor >9.0		--	7.9 min. 7.7	--	--	(8.0, 8.0)

1 - Survey results are for the composite sample. Grab sample ranges are shown in parentheses ( ).  
To obtain MGD multiply M<sup>3</sup>/day by 0.0002642  
To obtain lbs/day multiply kg/day by 2.205

Table 4 Comparison of the laboratory analytical results obtained by Mead Corporation - Otsego and the Environmental Protection Bureau from the split grab sample.

Outfall	030059 (001)	
	Mead Corp.	E.P.B.
Flow (M <sup>3</sup> /day)	2,380*	3,020
	mg/l	mg/l
Suspended solids	20	22
Settleable solids	--	< 4
BOD <sub>5</sub>	36	58

\* From company totalizer.

Mead Corporation - Otsego

Table 5 Comparison of the previous survey results with the results obtained in this survey.

Outfalls	030059 (001)		030250	
Survey Date From To	9-8-81 9-9-81	5-18-82 5-19-82	9-8-81 9-9-81	5-18-82 5-19-82
Flow Rate (M <sup>3</sup> /day)	1,800	3,020	1,200	767
	mg/l	mg/l	mg/l	mg/l
Suspended solids	28	29	36	< 4
Dissolved solids	680	640	520	320
Settleable solids	< 4	< 4	--	--
COD	150	140	7	3
BOD <sub>5</sub>	22	70.	2.3	2.2
CBOD <sub>5</sub>	15	19.	--	--
CBOD <sub>8</sub>	22	34	--	--
CBOD <sub>12</sub>	30	38	--	--
CBOD <sub>20</sub>	46	57	--	--
Nitrite & nitrate nitrogen-N	0.11	0.79	0.06	0.07
Ammonia nitrogen-N	6.0	9.0	0.05	0.05
Kjeldahl nitrogen-N	11.	13.	0.7	0.19
Total phosphorus-P	0.90	2.3	1.3	0.58
Chlorides	46	59.	100	15.0
Sulfate (SO <sub>4</sub> )	78	74	50	36
	ug/l	ug/l		
Total cadmium (Cd)	< 20	< 20		
Total chromium (Cr)	< 50	< 50		
Total copper (Cu)	< 20	< 20		
Total nickel (Ni)	< 50	< 50		
Total lead (Pb)	< 50	< 50		
Total zinc (Zn)	< 50	< 50		
Total aluminum (Al)	< 1,000	< 1,000		

RT 104247

Table 6 Sample Preservation

Parameter	Preservative
COD/TOC/Phenol/Nutrients (Chlorine Absent)	5 drops conc. $H_2SO_4$ /250 ml (to pH <2).
Total Metals	2 ml 1:1 $HNO_3$ /250 ml (to pH <2).
Oil & Grease	10 drops conc. $H_2SO_4$ /250 ml (to pH <2).
Base-neutral Extractables Purgeable Organics	Dechlorinated (if needed) with sodium thiosulfate (1 drop 0.141 N/mg/l $Cl_2$ /250 ml).
Acid Extractables	Dechlorinated (if needed) with sodium thiosulfate (1 drop 0.141 N/mg/l $Cl_2$ /250 ml). 40 drops $H_2SO_4$ /1000 ml (to pH <2).

Samples preserved as required, cooled to 4°C with chain of custody maintained.

Lab Letter Codes

- NA - Analytical method has not yet been approved by laboratory.
- DL - Sample was not analyzed using an optimum dilution.
- INT - Interference encountered during analysis resulted in no obtainable result.
- U - Indicates material was analyzed for but not detected.

Survey by: Martin Rock, Environmental Engineer  
L.J. McDonald, Water Quality Investigator  
Joseph Hey, Water Quality Technician

Contact with Manager: Mike Knapp

Certified Operator: David Keith

Laboratory Analyses by: Environmental Protection Bureau Laboratory

Report by: Martin Rock  
L.J. McDonald  
Point Source Studies Section  
Environmental Services Division  
Environmental Protection Bureau  
Michigan Department of Natural Resources

Distribution "A"

7/21/92

RT 104248

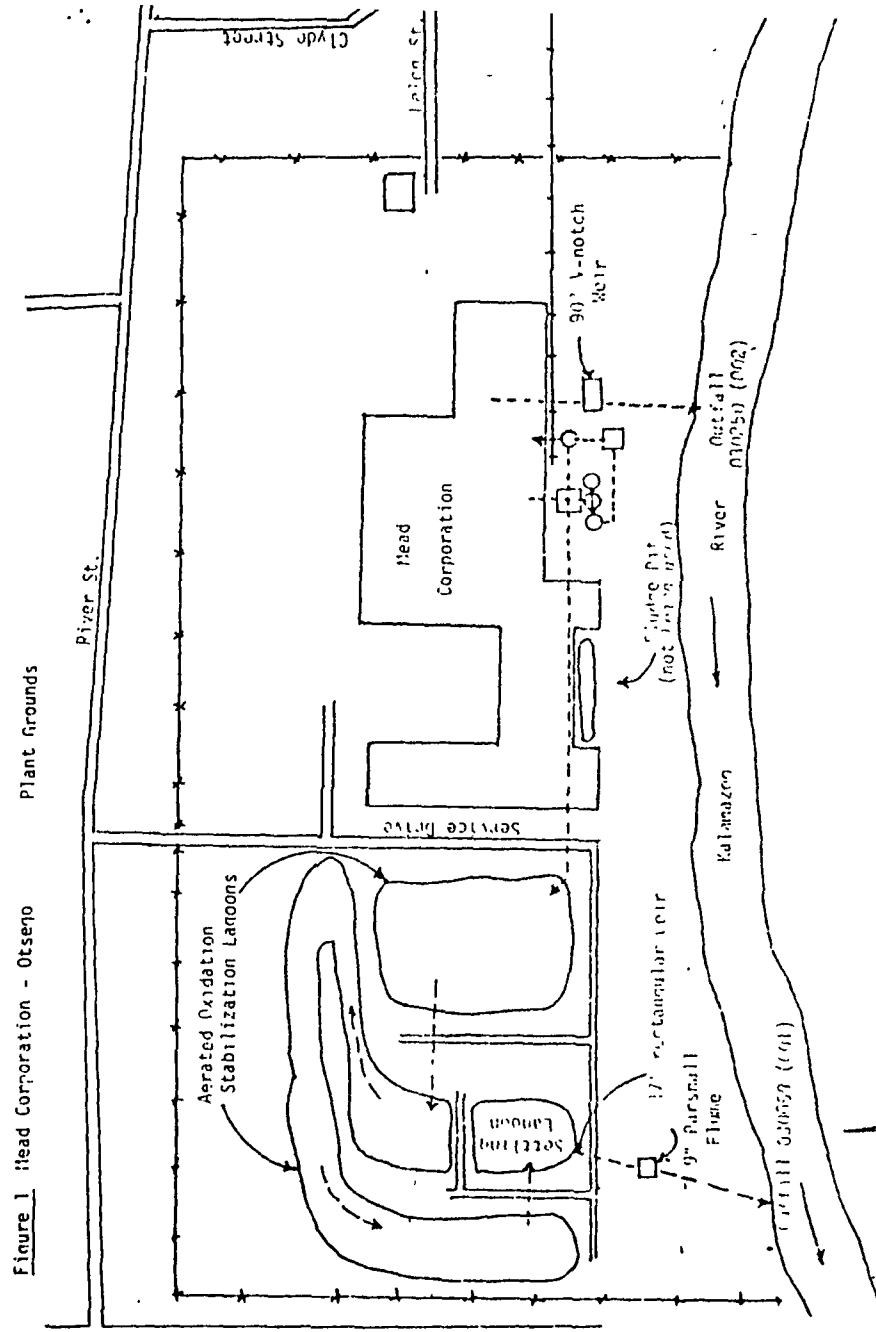


Figure 2 Mead Corporation - Otsego

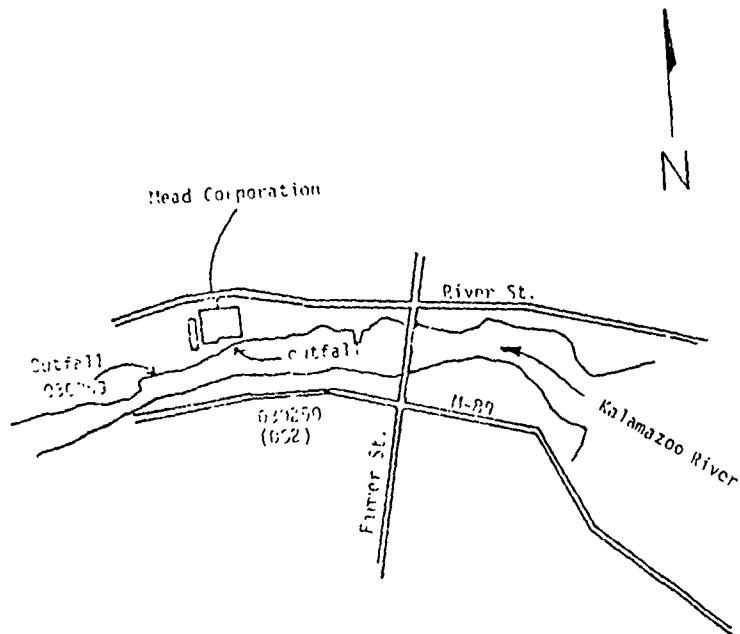
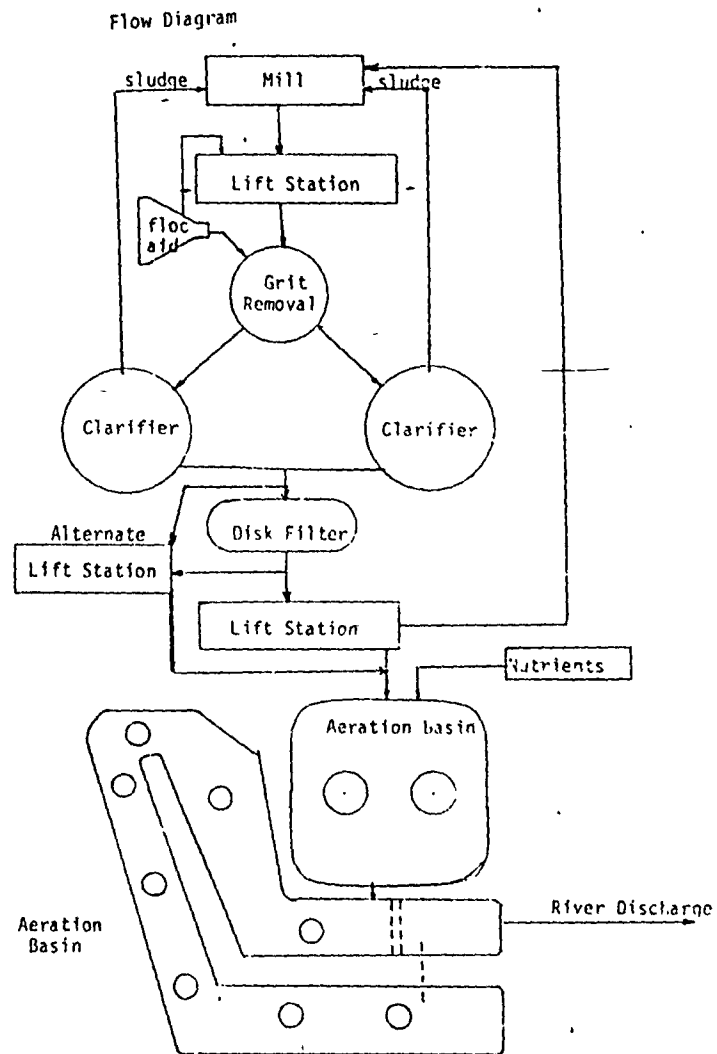


Figure 3 Mead - Otsego



RT 104249

TEX 12-17-81



V-16

NATURAL RESOURCES COMMISSION

JACOB A. HOEFER  
E. M. LAITALA  
HILARY F. SNELL  
PAUL H. WENDLER  
HARRY H. WHITELEY  
JOAN L. WOLFE  
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WILLIAM G. MILLIKEN, Governor

DEPARTMENT OF NATURAL RESOURCES

HOWARD A. TANNER, Director

State Office Building  
350 Ottawa N. W.  
Grand Rapids, Michigan 49503  
Phone: 456-6232

February 11, 1982

Mr. Michael Knapp  
Mead Corporation  
431 Helen St.  
Otsego, MI 49078

Dear Mr. Knapp:

Enclosed are two copies of the "Report of an Industrial Wastewater Survey" conducted at the Mead facility on September 8-9, 1981. Flow measurements, as well as chemical analysis of composite and grab samples, are listed in this report.

The survey results indicate the company was meeting the discharge limitations of its NPDES Permit (MI 0000787). The split composite results compared quite well, a reflection of the quality of the laboratory analyses being performed.

Reviewing the results of previous surveys, the trend at Outfall 001 shows a decrease in flow, BOD, COD, and orthophosphorus. Both total suspended solids and Kjeldahl nitrogen have increased. At Outfall 002 the flow has decreased but there was a definite increase in total phosphorus, total suspended solids and dissolved solids.

The increase in the parameters at Outfall 002 could be attributed to a white substance, reported as lime sludge, observed being discharged through this outfall. Outfall 002 is permitted for noncontact cooling water only, and the discharge of lime water softening waste is unauthorized. Such discharges must be ceased immediately. The facility's NPDES permit requires the Water Resources Commission be notified in the event a discharge is changed. Inform this office of what measures will be taken to correct the unauthorized discharge.

Your response and comments pertaining to this letter should be received by March 5, 1982. If you have any questions or comments, feel free to contact me at this office.

Sincerely,

WATER QUALITY DIVISION

*Marge Spruit*

Marge Spruit  
Water Quality Specialist

MS/mam

CC: WQ Files, Lansing  
Scott Ross, Compliance

RT 104250

MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
ENVIRONMENTAL PROTECTION BUREAU  
POINT SOURCE STUDIES SECTION

Report of an  
Industrial Wastewater Survey  
Conducted at  
HEAD PAPER COMPANY  
All Outfalls No. 030016  
NPDES Permit No. M10000787  
Allegan County  
Otsego, Michigan  
September 8-9, 1981

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Tuesday, September 8, 1981.

The results of this survey met the final limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. M10000787. The survey results are compared to the permit limitations in Table 3.

The survey results are compared to the results reported on the facility's Monthly Operating Report (MOR) in Table 3. The results compare well.

A portion of the composite sample taken at outfall 030059 (001) was split with the facility for comparison of laboratory analytical results. These results compare very well.

The results from this survey are compared to the results from the previous survey done on June 24, 1980 in Table 5.

Plant Processes

Head Paper Company produces multi-ply paperboard for the publishing, furniture, mobile home and automotive industries. The mill's operation during the survey was 24 hours a day, 4-1/2 days per week employing about 170 people. Production during the survey was considered below normal.

The mill receives baled secondary fibers (scrap paper) by rail and truck. This scrap paper is dumped into a hydropulper, sent through a cleaner, thickened, refined and put onto the 8-cylinder paper machine. The paper off the machine is laminated up to 5 plys (1/4 inch). Laminated sheets are then cut and packed for shipping.

Water Supply & Wastewater Treatment

Head Paper Company obtains process, cooling and domestic water from six wells. Water from the Kalamazoo River is used during a start up operation to

fill the chests. The amount of river water needed during a start up ranges from 25,000 to 100,000 gallons. The domestic water for the mill's office is supplied by the city. The domestic wastewater from the office is discharged to the City of Otsego sanitary sewer system.

Water used on the paper machines is chlorinated at the vat for slime control. The boiler water is treated using hot lime softening.

Wastewater due to boiler blowdown, softener backwash, compressor cooling, stock preparation, the paper machine, spills, plant equipment cleaning, floor drains and some surface runoff is pumped to two Infilco clarifiers operating in parallel. Sludge from the clarifiers and 60 to 80% of the effluent from the clarifiers is recycled back into the mill. The remaining waste water from the primary treatment system is pumped to two aerated lagoons which are followed by a settling lagoon. The effluent from the settling lagoon is discharged through the company's 9-inch Parshall flume to the Kalamazoo River, discharge 030059 (001).

Cooling waters used in the turbine house for cooling bearings at the air compressors, other non-contact cooling waters, and roof drainage flows are discharged through the skimmer to the Kalamazoo River through outfall 030159 (002).

A water flow diagram is in Figure 3. A diagram of the plant grounds and a map showing plant location are in Figures 1 & 2.

Survey Procedure

The flows and samples were obtained as follows:

Outfall	Flow Measurement	Sampling Methods
030059 (001)	17" rectangular weir with staff installed Stevens water level recorder.	Automatic air-activated composite & individual grabs.
030250 (002)		Automatic air-activated composite & individual grabs.

A water level recorder provides a continuous account of the liquid level, or head, above the crest of a weir. A head versus time graph is obtained for the duration of the survey period. The total volume of wastewater over the weir during the survey period is computed from the graph.

An automatic sampler composites samples at timed intervals. Samples may be proportional to the instantaneous flow over the weir.

An individual grab is a single instantaneous sample.

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

Samples were preserved according to Table 6. The results of the physical, chemical and bacteriological analyses are presented in Tables 1 & 2. Letter codes for laboratory results are defined in Table 6.

## Mead Paper Company - Otsego

Table 1 Analyses of composite samples.

Cafalls	030059 (001)		030250 (002)	
	9-8-81 - 1555		9-8-81 - 1615	
Survey Period From To	9-9-81 - 1555		9-9-81 - 1615	
Computed flow rate <sup>1</sup> (M <sup>3</sup> /day)	1,800		1,260	
	mg/l	kg/day	mg/l	kg/day
CO <sub>2</sub>	150	270	7	9
CO <sub>2</sub>	22	40.	2.3	2.9
CO <sub>2</sub>	15	27	--	--
CO <sub>2</sub>	22	40.	--	--
CO <sub>2</sub>	30	50	--	--
CO <sub>2</sub>	32	58	--	--
CO <sub>2</sub>	46	83	--	--
Nitrite & nitrate nitrogen-N	0.11	0.20	0.06	0.08
Ammonia nitrogen-N	6.0	11	0.06	0.08
Nitrate nitrogen-N	11.	20.	0.7 DL	0.9
Orthophosphates-P	0.46	0.83	0.19	0.24
Total phosphorus-P	0.90	1.6	1.3	1.6
Chlorides	46	83	100	100
Sulfate (SO <sub>4</sub> )	78	140	50	60
Suspended solids	28	50.	36	45
Dissolved solids	680	1,200	520	660
Settleable solids	< 4	--	--	--
	ug/l		ug/l	
Total cadmium (Cd)	< 20	--	--	--
Total chromium (Cr)	< 50	--	--	--
Total copper (Cu)	< 20	--	--	--
Total nickel (Ni)	< 50	--	--	--
Total lead (Pb)	< 50	--	--	--
Total zinc (Zn)	< 50	--	--	--
Total aluminum (Al)	< 1,000	--	--	--

1 - Flow rates used in the computation of kg/day.  
 To obtain MGD multiply M<sup>3</sup>/day by 0.0002642  
 To obtain lbs/day multiply kg/day by 2.205

## Mead Paper Company - Otsego

Table 2 Analyses of grab samples.

Date	Time	Temp. °C	pH	Residual Chlorine mg/l	Susp. solids mg/l	Total diss. solids mg/l	Settle. solids mg/l	COD mg/l	BOD <sub>5</sub> mg/l	CBD <sub>20</sub> mg/l	Nitrite & nitrate nitrogen mg/l	Ammonia nitrogen mg/l
030059 (001)	0010	20.5	7.9	U	27	680	< 4	160	22	47	0.05	5.9
9-9-81 0010	0010	20.5	8.2	U	29	670	4	160	23	49	0.15	6.2
030250 (002)	0020	17.5	8.0	U	20	360	--	< 3	--	--	0.06	0.09
9-9-81 0030	0030	10.0	7.7	U	120	380	--	< 3	--	--	0.04	0.03
9-9-81 0815	0815											
030059 (001)	0010	11.	0.45		0.90	44	79	1	< 2	< 20	Total chromium ug/l	Total copper ug/l
9-9-81 0010	0010	11.	0.49		0.90	45	81	< 1	< 2	< 20	< 50	< 20
030250 (002)	0020	0.7 DL	--		1.4	--	--	< 1	< 2	--	--	--
9-9-81 0030	0030	0.6 DL	--		1.9	--	--	< 1	< 2	--	--	--
9-9-81 0815	0815											
030059 (001)	0010			Total nickel ug/l	Total lead ug/l	Total zinc ug/l	Total aluminum ug/l					
9-9-81 0010	0010			< 50	< 50	< 50	< 1,000					
9-9-81 1355	1355			< 50	< 50	< 50	< 1,000					

1 - Values determined in the field at time of sampling.

RT 104252

Table 3 Comparison of survey results with the facility's flows permit and monthly operation report.

Parameter (Unit)	NPDES Permit Final Limitations		September Monthly Operation Report				Survey Results	
	Daily		Monthly		9-9-81		9-9-81	
	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum
030059 (001)								
Flow (M <sup>3</sup> /day)	--	--	2,130	3,550	1,070	2,330	1,800	1,800
Settleable solids (mg/l)	--	--	5	14	4	0	4	(-4, -4)
Suspended solids (kg/day)	295	455	74.8	206	26	55.8	50.	50.
BOD <sub>5</sub> (kg/day)	295	455	82.1	163	24	58	40.	40.
pH (S.U.)	not <6.0 nor >9.0		--	8.1	7.9	8.0		(7.9, 8.2)
				min. 7.8				
030250 (002)								
Flow (M <sup>3</sup> /day)	--	--	1,530	1,680	--	--	1,260	--
Oil & Grease (visual)	No visible film		0	0	0	0	0	--
Oil & Grease (mg/l)	Quantitative analysis not required		--	--	--	--	--	(-2, <2)
Temperature (°C)	--	--	17	18	--	--	--	(20.5, 25.5)
pH (S.U.)	not <6.0 nor >9.0		--	7.9	--	--	--	(8.0, 7.7)
				min. 7.8				

1 - Survey results are for the composite sample. Grab sample ranges are shown in parentheses ( ).  
 To obtain MGD multiply M<sup>3</sup>/day by 0.0002642  
 To obtain lbs/day multiply kg/day by 2.205

-6-

Table 4 Comparison of the laboratory analytical results obtained by Mead Paper Company - Otsego and the Environmental Protection Bureau from the split composite sample.

Outfall	030059 (001)	
	Mead Paper mg/l	E.P.B. mg/l
BOD <sub>5</sub>	25	22
Suspended solids	24	28
Settleable solids	0	< 4

Table 5 Comparison of the previous survey results with the results obtained in this survey at Mead Paper Company - Otsego.

Outfalls Survey Date	030059 (001)		030250 (002)	
	From To	6-24-80 6-25-80	9-8-81 9-9-81	6-24-80 6-25-80
		mg/l	mg/l	mg/l
COD		150	150	6
BOD <sub>5</sub>		41	22	2.6
Nitrite & nitrate nitrogen-N		0.60	0.11	0.07
Ammonia nitrogen-N		6.8	6.0	0.04
Kjeldahl nitrogen-N		9.2	11.	0.28
Orthophosphates-P		1.1	0.46	0.15
Total phosphorus-P		1.6	0.90	0.62
Sulfate (SO <sub>4</sub> )		82	78	--
Suspended solids		16	28	2
Dissolved solids		630	680	330
Total copper (Cu)		< 0.02	< 0.02	--
Total zinc (Zn)		< 0.05	< 0.05	--

Table 6 Sample Preservation

Parameter	Preservative
Free Chlorine (Chlorine Absent)	10 drops conc. $H_2SO_4$ /500 ml (to pH <2).
Total Metals	2 ml 1:1 $HNO_3$ /250 ml (to pH <2).
Oil & Grease	10 drops conc. $H_2SO_4$ /250 ml (to pH <2).

All samples cooled to 4°C and preserved upon collection and chain of custody maintained.

Lab Letter Codes

DL - Sample was not analyzed using an optimum dilution.

Survey by: Ralph Peznick, Environmental Engineer  
Amy Carter, Water Quality Technician  
Richard Irvin, Water Quality Technician

Contact with Management: Mike Knapp, Director of Utilities

Certified Operator: David Keith

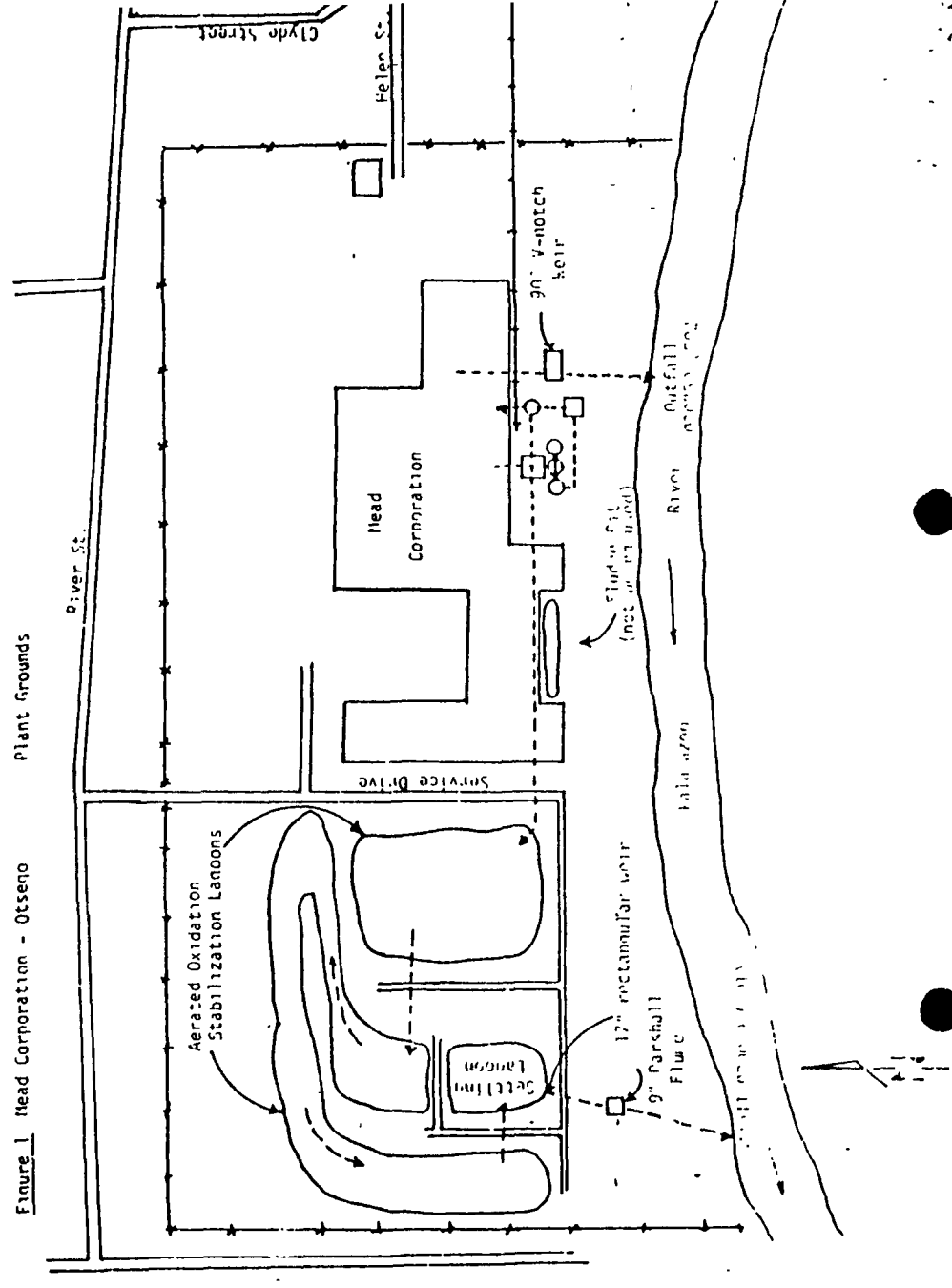
Hydrocarbon Analyses by: Environmental Protection Bureau Laboratory

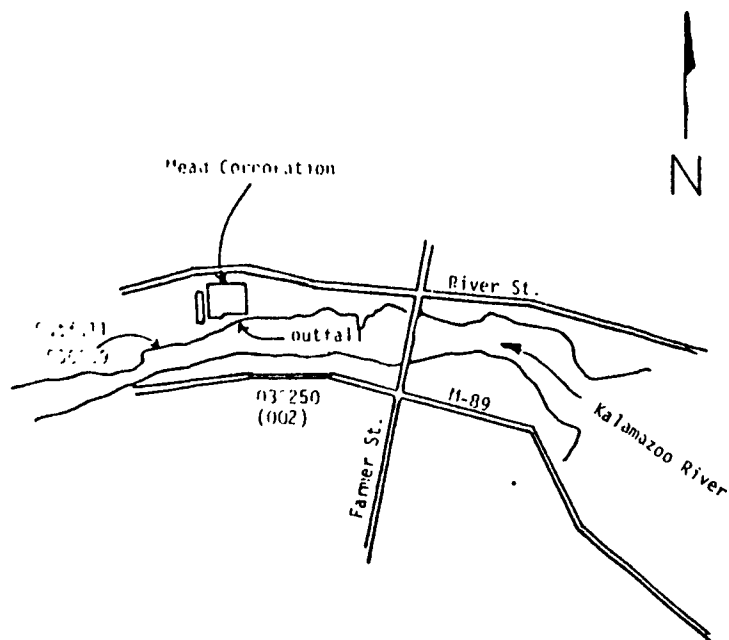
Physical, Chemical &  
Bacteriological Analyses by: Environmental Protection Bureau Laboratory

Report by: Ralph Reznick  
Amy Carter  
Point Source Studies Section  
Environmental Services Division  
Environmental Protection Bureau  
Michigan Dept. of Natural Resources

Distribution "A"  
12/3/81

RT 104254

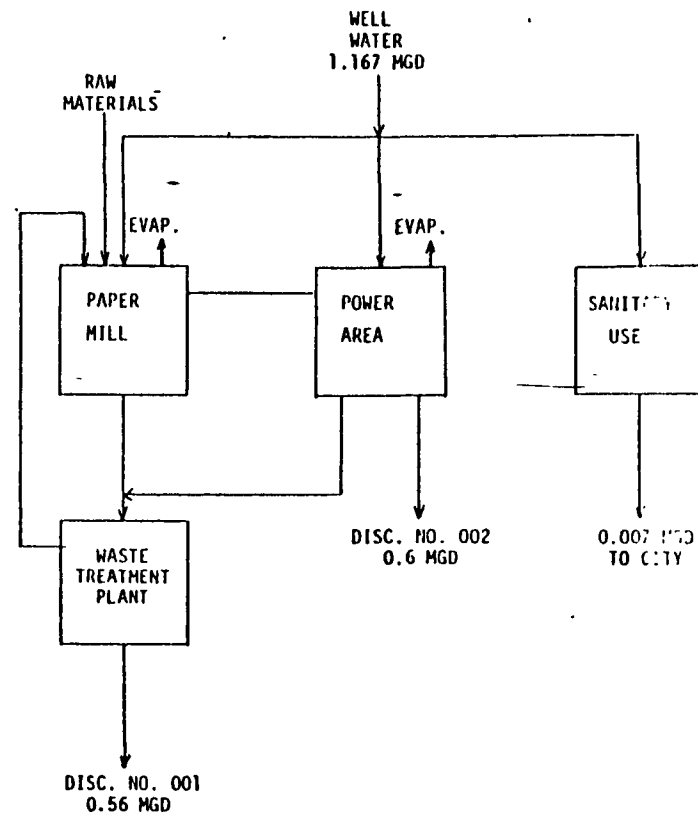




RT 104255

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Water Flow Diagram



MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
ENVIRONMENTAL PROTECTION BUREAU  
POINT SOURCE STUDIES SECTION

Report of an  
Industrial Wastewater Survey  
Conducted at  
MEAD PAPER COMPANY  
All Outfalls No. 030016  
NPDES Permit No. MI0000787  
Allegan County  
Otsego, Michigan  
September 8-9, 1981

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Tuesday, September 8, 1981.

The results of this survey met the final limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. MI0000787. The survey results are compared to the permit limitations in Table 3.

The survey results are compared to the results reported on the facility's Monthly Operating Report (MOR) in Table 3. The results compare well.

A portion of the composite sample taken at outfall 030059 (001) was split with the facility for comparison of laboratory analytical results. These results compare very well.

The results from this survey are compared to the results from the previous survey done on June 24, 1980 in Table 5.

Plant Processes

Mead Paper Company produces multi-ply paperboard for the publishing, furniture, mobile home and automotive industries. The mill's operation during the survey was 24 hours a day, 4-1/2 days per week employing about 170 people. Production during the survey was considered below normal.

The mill receives baled secondary fibers (scrap paper) by rail and truck. This scrap paper is dumped into a hydropulper, sent through a cleaner, thickened, refined and put onto the 8-cylinder paper machine. The paper off the machine is laminated up to 5 plys (1/4 inch). Laminated sheets are then cut and packed for shipping.

Water Supply & Wastewater Treatment

RT 104256

Mead Paper Company obtains process, cooling and domestic water from six wells. Water from the Kalamazoo River is used during a start up operation to

fill the chests. The amount of river water needed during a start up ranges from 25,000 to 100,000 gallons. The domestic water for the mill's office is supplied by the city. The domestic wastewater from the office is discharged to the City of Otsego sanitary sewer system.

Water used on the paper machines is chlorinated at the vats for slime control. The boiler water is treated using hot lime softening.

Wastewater due to boiler blowdown, softener backwash, compressor cooling, stock preparation, the paper machine, spills, plant equipment cleanup, floor drains and some surface runoff is pumped to two Infilco clarifiers operating in parallel. Sludge from the clarifiers and 60 to 80% of the effluent from the clarifiers is recycled back into the mill. The remaining wastewater from the primary treatment system is pumped to two aerated lagoons which are followed by a settling lagoon. The effluent from the settling lagoon is discharged through the company's 9-inch Parshall flume to the Kalamazoo River, discharge 030059 (001).

Cooling waters used in the turbine house for cooling bearings at the air compressors, other non-contact cooling waters, and roof drainage flows are discharged through the skimmer to the Kalamazoo River through outfall 030159 (002).

A water flow diagram is in Figure 3. A diagram of the plant grounds and a map showing plant location are in Figures 1 & 2.

### Survey Procedure

The flows and samples were obtained as follows:

<u>Outfall</u>	<u>Flow Measurement</u>	<u>Sampling Methods</u>
030059 (001)	17" rectangular weir with staff installed Stevens water level recorder.	Automatic air-activated composite & individual grabs.
030250 (002)		Automatic air-activated composite & individual grabs.

A water level recorder provides a continuous account of the liquid level, or head, above the crest of a weir. A head versus time graph is obtained for the duration of the survey period. The total volume of wastewater over the weir during the survey period is computed from the graph.

An automatic sampler composites samples at timed intervals. Samples may be proportional to the instantaneous flow over the weir.

An individual grab is a single instantaneous sample.

RT 104257

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

Samples were preserved according to Table 6. The results of the physical, chemical and bacteriological analyses are presented in Tables 1 & 2. Letter codes for laboratory results are defined in Table 6.

Mead Paper Company - Otsego

Table 1 Analyses of composite samples.

Outfalls	030059 (001)		030250 (002)	
Survey Period From	9-8-81 - 1555		9-8-81 - 1615	
To	9-9-81 - 1555		9-9-81 - 1615	
Computed flow rate <sup>1</sup> (M <sup>3</sup> /day)	1,800		1,260	
	<u>mg/l</u>	<u>kg/day</u>	<u>mg/l</u>	<u>kg/day</u>
COD	150	270	7	9
BOD <sub>5</sub>	22	40.	2.3	2.9
CBOD <sub>5</sub>	15	27	--	--
CBOD <sub>8</sub>	22	40.	--	--
CBOD <sub>12</sub>	30	50	--	--
CBOD <sub>14</sub>	32	58	--	--
CBOD <sub>20</sub>	46	83	--	--
Nitrite & nitrate nitrogen-N	0.11	0.20	0.06	0.08
Ammonia nitrogen-N	6.0	11	0.06	0.08
Kjeldahl nitrogen-N	11.	20.	0.7 DL	0.9
Orthophosphates-P	0.46	0.83	0.19	0.24
Total phosphorus-P	0.90	1.6	1.3	1.6
Chlorides	46	83	100	100
Sulfate (SO <sub>4</sub> )	78	140	50	60
Suspended solids	28	50.	36	45
Dissolved solids	680	1,200	520	660
Settleable solids	< 4	--	--	--
	<u>ug/l</u>		<u>ug/l</u>	
Total cadmium (Cd)	< 20	--	--	--
Total chromium (Cr)	< 50	--	--	--
Total copper (Cu)	< 20	--	--	--
Total nickel (Ni)	< 50	--	--	--
Total lead (Pb)	< 50	--	--	--
Total zinc (Zn)	< 50	--	--	--
Total aluminum (Al)	< 1,000	--	--	--

1 - Flow rates used in the computation of kg/day.

To obtain MGD multiply M<sup>3</sup>/day by 0.0002642

To obtain lbs/day multiply kg/day by 2.205

RT 104258

Mead Paper Company - Otsego

Table 2 Analyses of grab samples.

Date	Time	Temp. <sup>1</sup> °C	pH <sup>1</sup> S.U.	Residual <sup>1</sup> Chlorine mg/l	Susp. solids mg/l	Total diss. solids mg/l	Settle. solids mg/l	COD mg/l	BOD <sub>5</sub> mg/l	CBOD <sub>20</sub> mg/l	Nitrite & nitrate nitrogen mg/l	Ammonia nitrogen mg/l
030059 (001)												
9-9-81	0010	20.5	7.9	U	27	680	< 4	160	22	47	0.05	5.9
9-9-81	1355	20.5	8.2	U	29	670	< 4	160	23	49	0.15	6.2
030250 (002)												
9-9-81	0030	17.5	8.0	U	20	360	--	< 3	--	--	0.06	0.09
9-9-81	0815	10.0	7.7	U	120	380	--	< 3	--	--	0.04	0.03
		Kjeldahl nitrogen mg/l	Ortho- phosphates-P mg/l	Total phosphorus-P mg/l	Chlorides mg/l	Sulfate mg/l	O&G I.R. mg/l	O&G Grav. mg/l	Total cadmium ug/l	Total chromium ug/l	Total copper ug/l	
030059 (001)												
9-9-81	0010	11.	0.45	0.90	44	79	1	< 2	< 20	< 50	< 20	4
9-9-81	1355	11.	0.49	0.90	45	81	< 1	< 2	< 20	< 50	< 20	
030250 (002)												
9-9-81	0030	0.7 DL	--	1.4	--	--	< 1	< 2	--	--	--	
9-9-81	0815	0.6 DL	--	1.9	--	--	1	< 2	--	--	--	
		Total nickel ug/l	Total lead ug/l	Total zinc ug/l	Total aluminum ug/l							
030059 (001)												
9-9-81	0010	< 50	< 50	< 50	< 1,000							
9-9-81	1355	< 50	< 50	< 50	< 1,000							

1 - Values determined in the field at time of sampling.

RT 104259

Mead Paper Company - Otsego

Table 3 Comparison of survey results with the facility's NPDES Permit and Monthly Operating Report.

<u>Parameter (Unit)</u>	<u>NPDES Permit Final Limitations</u>		<u>September Monthly Operating Report</u>				<u>Survey Results<sup>1</sup></u>
	<u>Daily Average</u>	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Monthly Maximum</u>	<u>9-8-81</u>	<u>9-9-81</u>	
030059 (001)			.56m <sup>40</sup>	.94	.28	.62	.48
Flow (M <sup>3</sup> /day)	--	--	2,130	3,550	1,070	2,330	1,800
Settleable solids (mg/l)	--	--	5	14	4	0	< 4 (<4, <4)
Suspended solids (kg/day)	295	455	74.8	206	26	55.8	50.
BOD <sub>5</sub> (kg/day)	295	455	82.1	163	24	58	40.
pH (S.U.)	not <6.0 nor >9.0		--	8.1 min. 7.8	7.9	8.0	(7.9, 8.2)
030250 (002)							
Flow (M <sup>3</sup> /day)	--	--	1,530	1,680	--	--	1,260
Oil & Grease (visual)	No visible film		0	0	0	0	--
Oil & Grease (mg/l)	Quantitative analysis not required		--	--	--	--	(<2, <2)
Temperature (°C)	--	--	17	18	--	--	(20.5, 20.5)
pH (S.U.)	not <6.0 nor >9.0		--	7.9 min. 7.8	--	--	(8.0, 7.7)

1 - Survey results are for the composite sample. Grab sample ranges are shown in parentheses ( ).

To obtain MGD multiply M<sup>3</sup>/day by 0.0002642

To obtain lbs/day multiply kg/day by 2.205

RT 104260

Table 4 Comparison of the laboratory analytical results obtained by Mead Paper Company - Otsego and the Environmental Protection Bureau from the split composite sample.

Outfall	030059 (001)	
	<u>Mead Paper</u> mg/l	<u>E.P.B.</u> mg/l
BOD <sub>5</sub>	25	22
Suspended solids	24	28
Settleable solids	0	< 4

Table 5 Comparison of the previous survey results with the results obtained in this survey at Mead Paper Company - Otsego.

Outfalls Survey Date	From To	030059 (001)		030250 (002)	
		6-24-80 6-25-80	9-8-81 9-9-81	6-24-80 6-25-80	9-8-81 9-9-81
		<u>mg/l</u>	<u>mg/l</u>	<u>mg/l</u>	<u>mg/l</u>
COD		150	150	6	7
BOD <sub>5</sub>		41	22	2.6	2.3
Nitrite & nitrate nitrogen-N		0.60	0.11	0.07	0.06
Ammonia nitrogen-N		6.8	6.0	0.04	0.06
Kjeldahl nitrogen-N		9.2	11.	0.28	0.7
Orthophosphates-P		1.1	0.46	0.15	0.19
Total phosphorus-P		1.6	0.90	0.62	1.3
Sulfate (SO <sub>4</sub> )		82	78	--	--
Suspended solids		16	28	2	36
Dissolved solids		630	680	330	520
Total copper (Cu)		< 0.02	< 0.02	--	--
Total zinc (Zn)		< 0.05	< 0.05	--	--

Table 6 Sample Preservation

<u>Parameter</u>	<u>Preservative</u>
COD (Chlorine Absent)	10 drops conc. H <sub>2</sub> SO <sub>4</sub> /500 ml (to pH <2).
Total Metals	2 ml 1:1 HNO <sub>3</sub> /250 ml (to pH <2).
Oil & Grease	10 drops conc. H <sub>2</sub> SO <sub>4</sub> /250 ml (to pH <2).

All samples cooled to 4°C and preserved upon collection and chain of custody maintained.

Lab Letter Codes

DL - Sample was not analyzed using an optimum dilution.

Survey by: Ralph Reznick, Environmental Engineer  
Amy Carter, Water Quality Technician  
Richard Irvin, Water Quality Technician

Contact with Management: Mike Knapp, Director of Utilities

Certified Operator: David Keith

Hydrocarbon Analyses by: Environmental Protection Bureau Laboratory

Physical, Chemical &  
Bacteriological Analyses by: Environmental Protection Bureau Laboratory

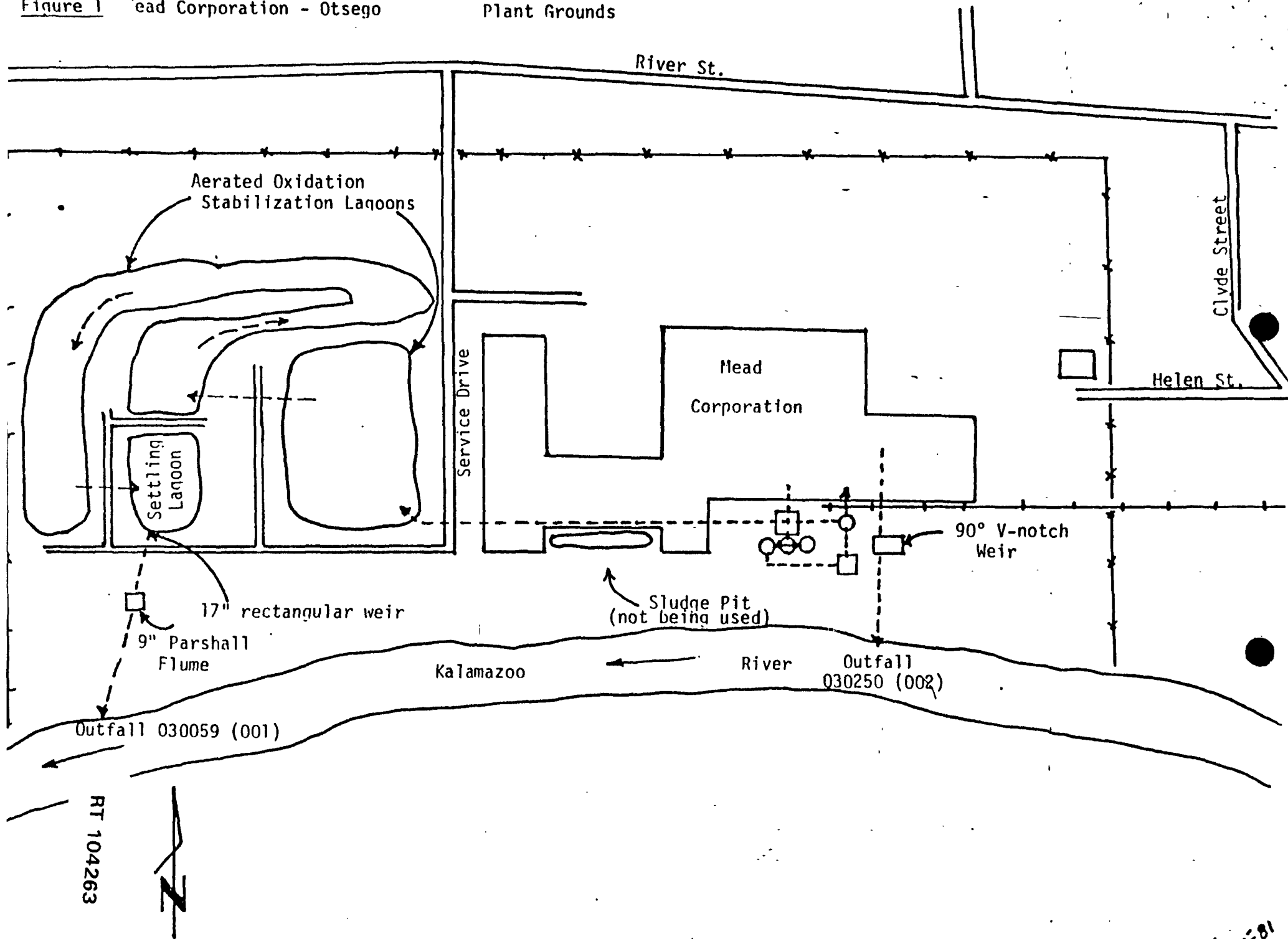
Report by: Ralph Reznick  
Amy Carter  
Point Source Studies Section  
Environmental Services Division  
Environmental Protection Bureau  
Michigan Dept. of Natural Resources

Distribution "A"  
MM  
12/3/81

RT 104262

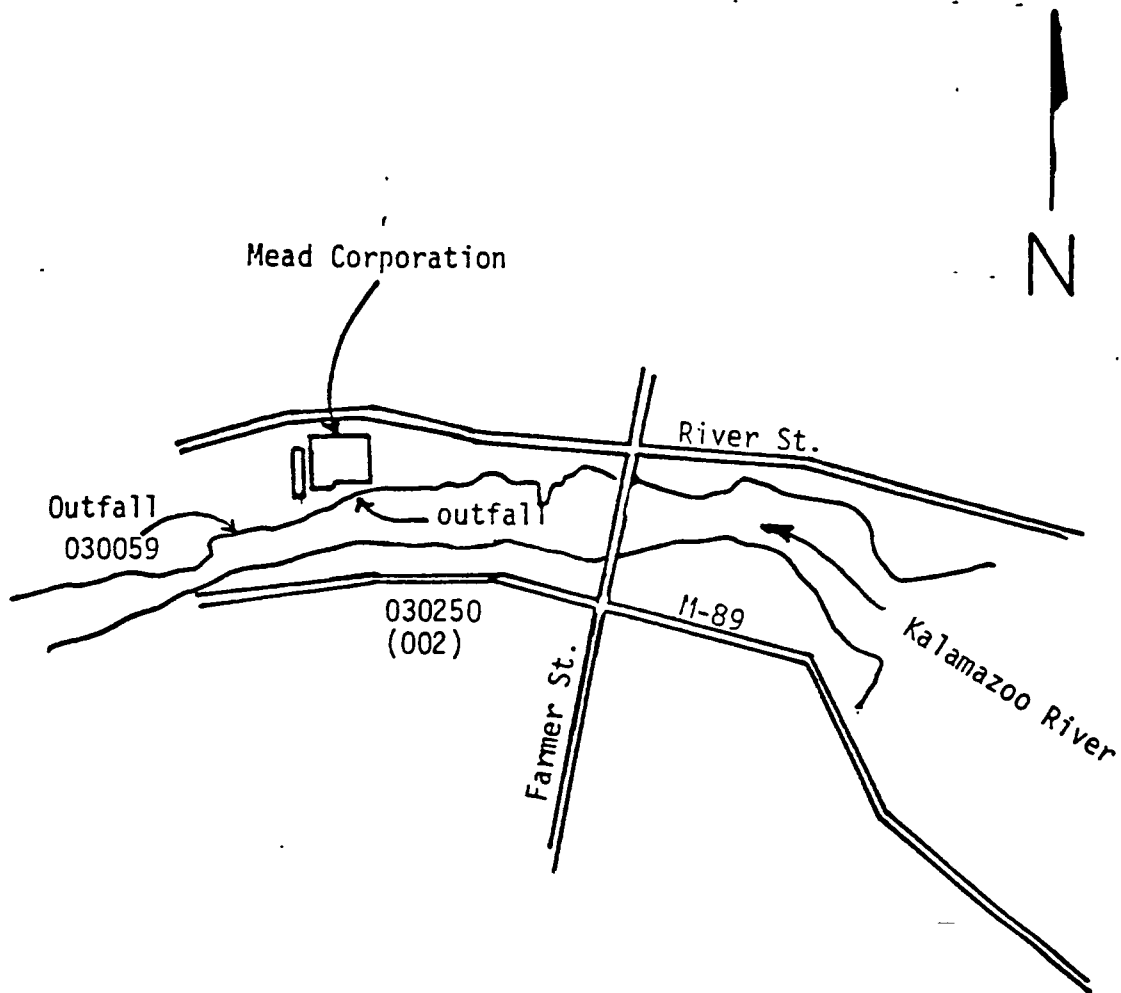
Figure 1 Mead Corporation - Otsego

Plant Grounds



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12-16-81

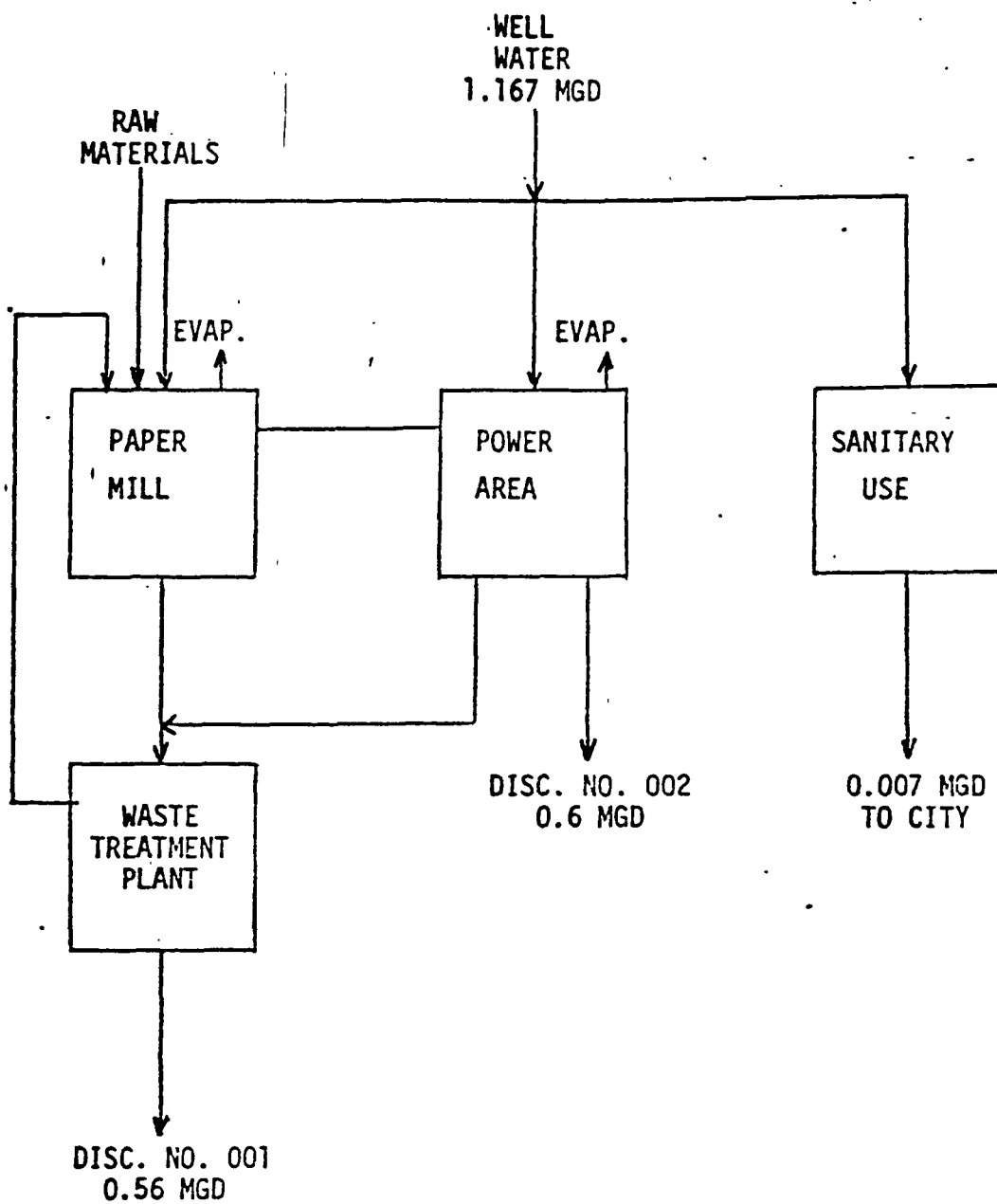
Figure 2 Mead Corporation - Otsego



RT 104264

Figure 3 Mead Corporation - Otsego

Water Flow Diagram





WILLIAM G. MILLIKEN, Governor

## DEPARTMENT OF NATURAL RESOURCES

HOWARD A. TANNER, Director

State Office Building  
350 Ottawa Avenue, N. W.  
Grand Rapids, Michigan 49503

November 6, 1980

OTSEGO  
WATER

Mr. Michael Knapp  
Mead Corporation  
431 Helen Street  
Otsego, Michigan 49078

Dear Mr. Knapp:

Enclosed is a copy of the "Report of an Industrial Wastewater Survey." The survey was conducted at the Mead facility on June 24-25, 1980. Flow measurements and the chemical analyses of the composite and grab samples are listed in this report.

The results of the survey indicate the company was meeting the limitations of its N.P.D.E.S. Permit (MI 0000787).

A comparison of this survey's results with previous surveys shows an improvement in the effluent being discharged. The volume of cooling water being discharged has also decreased from previous years. This is probably a result of more accurate flow measurements with the installation of the 90° v-notch weir.

A composite sample has been split with the company over the years. Generally, the B.O.D. results reported by the company are lower than those reported by the Environmental Protection Bureau (E.P.B.) Laboratory. In contrast, the company's results for suspended solids are greater than the E.P.B.'s values. This same trend is evident on this year's split composite. Although the discrepancies are not great, both differences do merit a review of the analytical procedures presently being utilized.

The level of ammonia nitrogen-N (6.8 mg/l) has increased since last year's survey (1.3 mg/l). Had ammonia been added to the aeration lagoons at the time of the survey? Perhaps the feed rate should be reduced in order to decrease the ammonia level in the discharge.

Your comments on the survey report and above-mentioned items are requested by December 1, 1980.

Sincerely,

WATER QUALITY DIVISION

Marge Spruit  
Marge Spruit,  
Water Quality Specialist

MS/mc - Enclosures  
MICHIGAN: W.Q.D. Files, Lansing

RT 104266

MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
ENVIRONMENTAL PROTECTION BUREAU  
POINT SOURCE STUDIES SECTION

Report of an  
Industrial Wastewater Survey  
Conducted at  
MEAD PAPER COMPANY  
All Outfalls No. 030016  
NPDES No. MI0000787  
Allegan County  
Otsego, Michigan  
June 24-25, 1980

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Tuesday, June 24, 1980.

The results of this survey met the final limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. MI0000787 (Table 3).

Survey results are compared to the company's Monthly Operating Report (MOR) in Table 3. Reported loading values compared well with survey loadings with the exception of BOD<sub>5</sub>.

The composite sample from the process outfall 030059 (001) was split with the company for comparison of laboratory results. The results are compared in Table 4.

The survey results are compared to the results from the previous survey conducted in September, 1979 in Table 5.

Plant Processes

Mead Paper Company produces multi-ply paperboard for the publishing, furniture, mobile home and automotive industries. The mill's operation during the survey was 24 hours a day, 4-1/2 days per week employing about 170 people. Production during the survey was considered below normal.

The mill receives baled secondary fibers (scrap paper) by rail and truck. This scrap paper is dumped into a hydropulper, sent through a cleaner, thickened, refined and put onto the 8-cylinder paper machine. The paper off the machine is laminated up to 5 plys (1/4 inch).

Water Supply, Wastewater & Treatment

RT 104267

Mead Paper Company obtains process, cooling, and domestic water from six wells. Water from the Kalamazoo River is used during a start up operation to

fill the chests. The amount of river water needed during a start up ranges from 25,000 to 100,000 gallons. The domestic water for the mill's office is supplied by the city. The domestic wastewater from the office is discharged to the City of Otsego sanitary sewer system.

Water used on the paper machines is chlorinated at the vats for slime control. The boiler water is treated using hot lime softening.

Wastewater due to boiler blowdown, softener backwash, compressor cooling, stock preparation, the paper machine, spills, plant equipment cleanup, floor drains and some surface runoff is pumped to two Infilco clarifiers operating in parallel. Sludge from the clarifiers and 80% of the effluent from the clarifiers is recycled back into the mill. The remaining 20% of the wastewater from the primary treatment system is pumped to two aerated lagoons which are followed by a settling lagoon. The effluent from the settling lagoon is discharged through the company's 9-inch Parshall flume to the Kalamazoo River, discharge 030059 (001).

Cooling waters used in the turbine house for cooling bearings at the air compressors, other non-contact cooling waters, and roof drainage flows are discharged through the skimmer to the Kalamazoo River through outfall 030159 (002).

All sludge is currently being recycled, therefore the pit is not in use at this time.

### Survey Procedure

The flows and samples were obtained as follows:

<u>Outfall</u>	<u>Flow Measurement</u>	<u>Sampling</u>
030059 (001)	Company installed 17" rectangular weir with end contractions; staff installed water level recorder.	Automatic air-activated sampler.
030250 (002)	Company estimate.	Grab composite.

A water level recorder provides a continuous account of the liquid level or head above the crest of a weir. A head versus time graph is obtained for the duration of the survey period. The total volume of wastewater over the weir during the survey period is computed from the graph.

An automatic sampler composites samples at timed intervals. Samples may be proportional to the instantaneous flow over the weir.

A grab composite consists of a series of individual grabs composited into one sample.

An individual grab is a single instantaneous sample.

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

Samples were preserved according to Table 6. The results of the physical, chemical and bacteriological analyses are presented in Tables 1 & 2.

Table 1 Analyses of composite samples.

Outfalls	030059 (001)		030250 (002) <sup>2</sup>	
Survey Period From	6-24-80 - 1155		6-24-80 - 1220	
To	6-25-80 - 1155		6-25-80 - 1220	
Computed flow rate <sup>1</sup> (M <sup>3</sup> /day)	2,610		(1,250)	
Highest flow rate (M <sup>3</sup> /day)	2,960 - 6-25-80 @ 0938		--	
Lowest flow rate (M <sup>3</sup> /day)	2,280 - 6-24-80 @ 1155		--	
	<u>mg/l</u>	<u>kg/day</u>	<u>mg/l</u>	<u>kg/day</u>
Suspended solids	16	42	2	3
Dissolved solids	630	1,600	330	410
COD	150	390	6	8
BOD <sub>5</sub>	41	100 <sup>3</sup>	2.6	3.3
Nitrite & nitrate nitrogen-N	0.60	1.6	0.07	0.09
Ammonia nitrogen-N	6.8	18	0.04	0.05
Kjeldahl nitrogen-N	9.2	24	0.28	0.35
Orthophosphates-P	1.1	2.9	0.15	0.19
Total phosphorus-P	1.6	4.2	0.62	0.78
Sulfate (SO <sub>4</sub> )	82	210	--	--
Total copper (Cu)	< 0.02	--	< 0.02	--
Total zinc (Zn)	< 0.05	--	< 0.05	--

1 - Flow rates used in the computation of kg/day (obtained from company totalizer/MOR).

2 - Formerly designated as outfall 030159.

3 - 2 significant digits.

To obtain MGD multiply M<sup>3</sup>/day by 0.0002642

To obtain lbs/day multiply kg/day by 2.205

Mead Paper Company - Otsego

Table 2 Analyses of grab samples.

Date	Time	Flow <sup>1</sup> M <sup>3</sup> /day	Temp. <sup>1</sup>		pH <sup>1</sup> S.U.	O&G I.R. mg/l	O&G Grav. mg/l	Susp. solids mg/l	Total diss. solids mg/l	COD mg/l	BOD <sub>5</sub> mg/l	Nitrite & nitrate nitrogen mg/l	Ammonia nitrogen mg/l	Kjeldal nitrogen mg/l
030159 (001)														
6-24-80	2200	2,700	25	--	8.0	< 1	< 2	16	580	140	40	0.74	7.0	10.
6-25-80	0840	2,900	24	--	7.9	< 1	< 2	19	590	150	37	0.68	7.0	12.
030250 (002)														
6-24-80	1750	--	20.5	69	7.9	< 1	< 2	< 2	440	7	2.9	0.07	0.10	7.20
6-25-80	0920	--	20.5	69	7.9	< 1	< 2	< 2	340	7	2.0	0.06	0.02	14
		Ortho- phosphates-P mg/l	Total phosphorus-P mg/l		Sulfate mg/l	Total copper mg/l		Total zinc mg/l						
030159 (001)														
6-24-80	2200	1.1	1.5		78	< 0.02		< 0.05						
6-25-80	0840	1.2	1.6		80	< 0.02		< 0.05						
030250 (002)														
6-24-80	1750	0.14	0.50		--	< 0.02		0.1						
6-25-80	0920	0.13	0.57		--	< 0.02		< 0.05						

1 - Values determined in the field at time of sampling.

RT 104270

Mead Paper Company - Otsego

RT 104271

Table 3 Comparison of survey results with the facility's NPDES Permit and Monthly Operating Report.

Parameter (Unit)	NPDES Permit Final		June Monthly Operating Report				Survey Result
	Limitations		Monthly Average	Monthly Maximum	6-24-80	6-25-80	
	Daily Average	Daily Maximum					
030059 (001)							
Flow (M <sup>3</sup> /day)	2,480		2,300	3,600	2,410	2,900	2,610
Settleable solids <sup>2</sup> (mg/l)	--	--	3	20	12	0	--
Suspended solids (kg/day)	295	455	39	87.1	58.1	58.1	42
BOD <sub>5</sub> (kg/day)	295	455	58.5	128	50.8	69.4	100
pH (S.U.)	not <6.0 nor >9.0		min. 7.8	8.1	8.0	8.0	(8.0, 7.
030250 (002)							
Flow (M <sup>3</sup> /day)	2270	--	--	--	--	--	1,250 <sup>3</sup>
Oil & Grease (visual)	No visual film		0	0	0	0	--
Oil & Grease (mg/l)	--	--	--	--	--	--	(<2, <2)
Temperature (°F)	--	**	--	--	--	--	(69, 69)

1 - Survey results are for the composite sample. Grab sample ranges are shown in parentheses ( ).

2 - Permit specified that the discharge shall be essentially free of floating and settleable solids, and shall not cause excessive foam in the receiving waters.

3 - Company estimate.

4 - E.P.B. results converted from °C.

\*\* - For month of June, discharge shall not raise temperature of receiving waters above 84°F.

To obtain MGD multiply M<sup>3</sup>/day by 0.0002642

To obtain lbs/day multiply kg/day by 2.205

Table 4 Comparison of the laboratory analytical results obtained by Mead Paper Company and the Environmental Protection Bureau from the split composite sample.

Outfall	030059 (001)	
	<u>Mead Paper</u>	<u>E.P.B.</u>
*Flow (M <sup>3</sup> /day)	2,010	2,610
	<u>mg/l</u>	<u>mg/l</u>
BOD <sub>5</sub>	24	41
Suspended solids	28	16

\* Flow obtained from company totalizer.

Mead Paper Company - Otsego

Table 5 Comparison of the previous survey results with the results obtained in this survey.

Outfall		030059 (001)	
Survey Date	From	9-10-79	6-24-80
	To	9-11-79	6-25-80
Flow Rate (M <sup>3</sup> /day)		2,930	2,610
		<u>mg/l</u>	<u>mg/l</u>
Suspended solids		(36, 30, 30)	16
Dissolved solids		(620, 610, 610)	630
Settleable solids		(<1, 2, <1)	--
COD		(310, 180, 220)	150
BOD <sub>5</sub>		(42, 37, 39)	41
Nitrite & nitrate nitrogen-N		(0.58, 0.48, 0.48)	0.60
Ammonia nitrogen-N		(1.3, 1.3, 1.2)	6.8
Total phosphorus-P		(0.77, 0.76, 0.73)	1.6
Total copper (Cu)		(<0.02, <0.02, <0.02)	< 0.02
Total zinc (Zn)		(<0.02, <0.02, <0.02)	< 0.05

Note: Figures in parentheses are from instantaneous grabs.  
All other values from composite samples.

Outfall		030250 (002)*	
Survey Date	From	9-10-79	6-24-80
	To	9-11-79	6-25-80
Flow rate (M <sup>3</sup> /day)		2,080	1,250
		<u>mg/l</u>	<u>mg/l</u>
Suspended solids		1	2
Dissolved solids		370	330
COD		7	6
BOD <sub>5</sub>		1.9	2.6
Nitrite & nitrate nitrogen-N		0.22	0.07
Ammonia nitrogen-N		0.021	0.04
Total phosphorus-P		0.57	0.62

\* Formerly designated as outfall 030159.

Table 6 Sample Preservation

Parameter

Preservative

COD

10 drops conc.  $H_2SO_4$ /250 ml (to pH <2).

Total Metals

2 ml 1:1  $HNO_3$ /250 ml (to pH <2).

Oil & Grease

10 drops conc.  $H_2SO_4$ /250 ml (to pH <2).

All samples cooled to 4°C and preserved upon collection and chain of custody maintained.

Survey by: Mike Stifler, Environmental Engineer  
Amy Carter, Water Quality Technician  
Edward Hamilton, Water Quality Technician

Contact with Management: Mike Knapp, Director of Utilities  
David Keith, Certified Operator

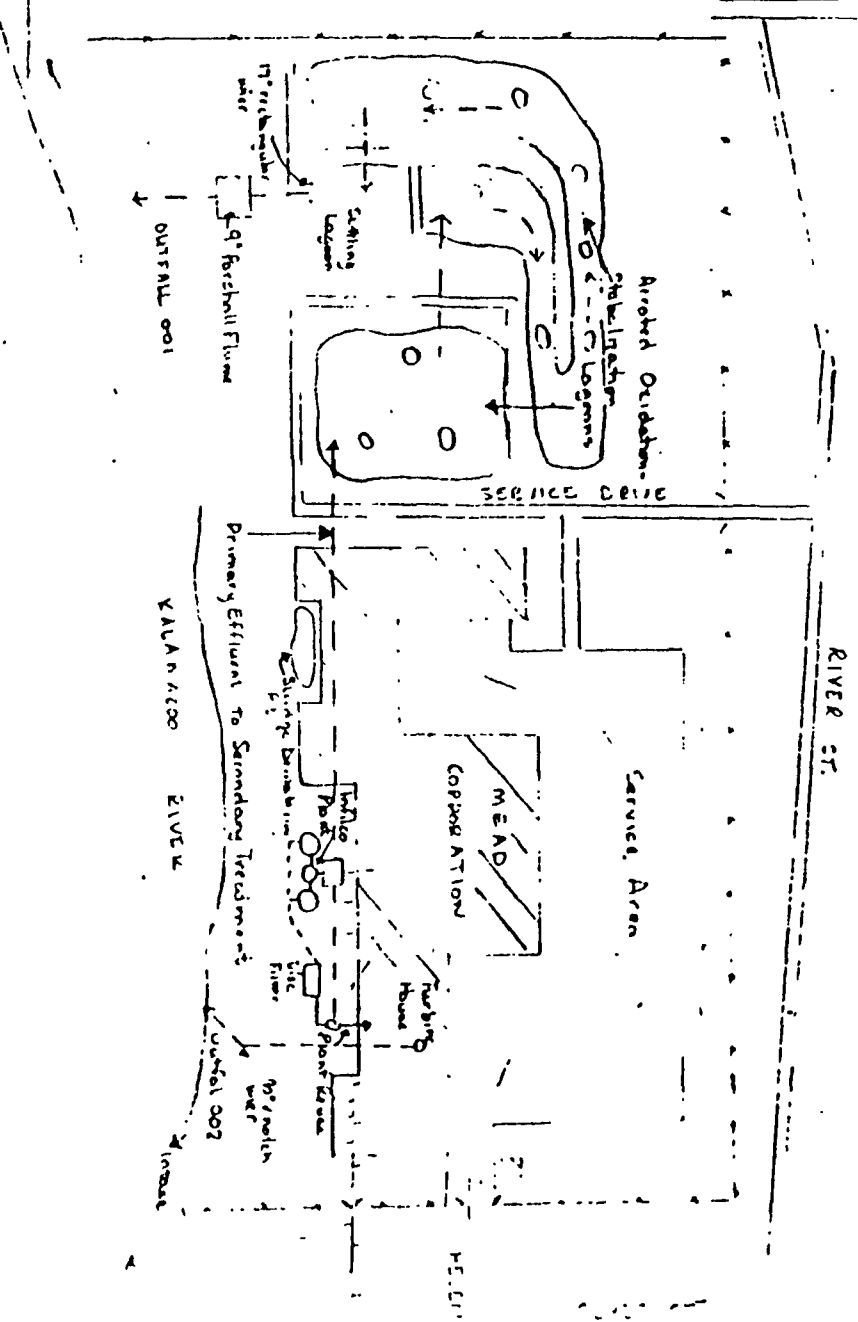
Physical, Chemical &  
Bacteriological Analyses by: Environmental Protection Bureau Laboratory

Report by: Mike Stifler  
Edward Hamilton  
Point Source Studies Section  
Environmental Services Division  
Environmental Protection Bureau  
Michigan Dept. of Natural Resources

Distribution "A"

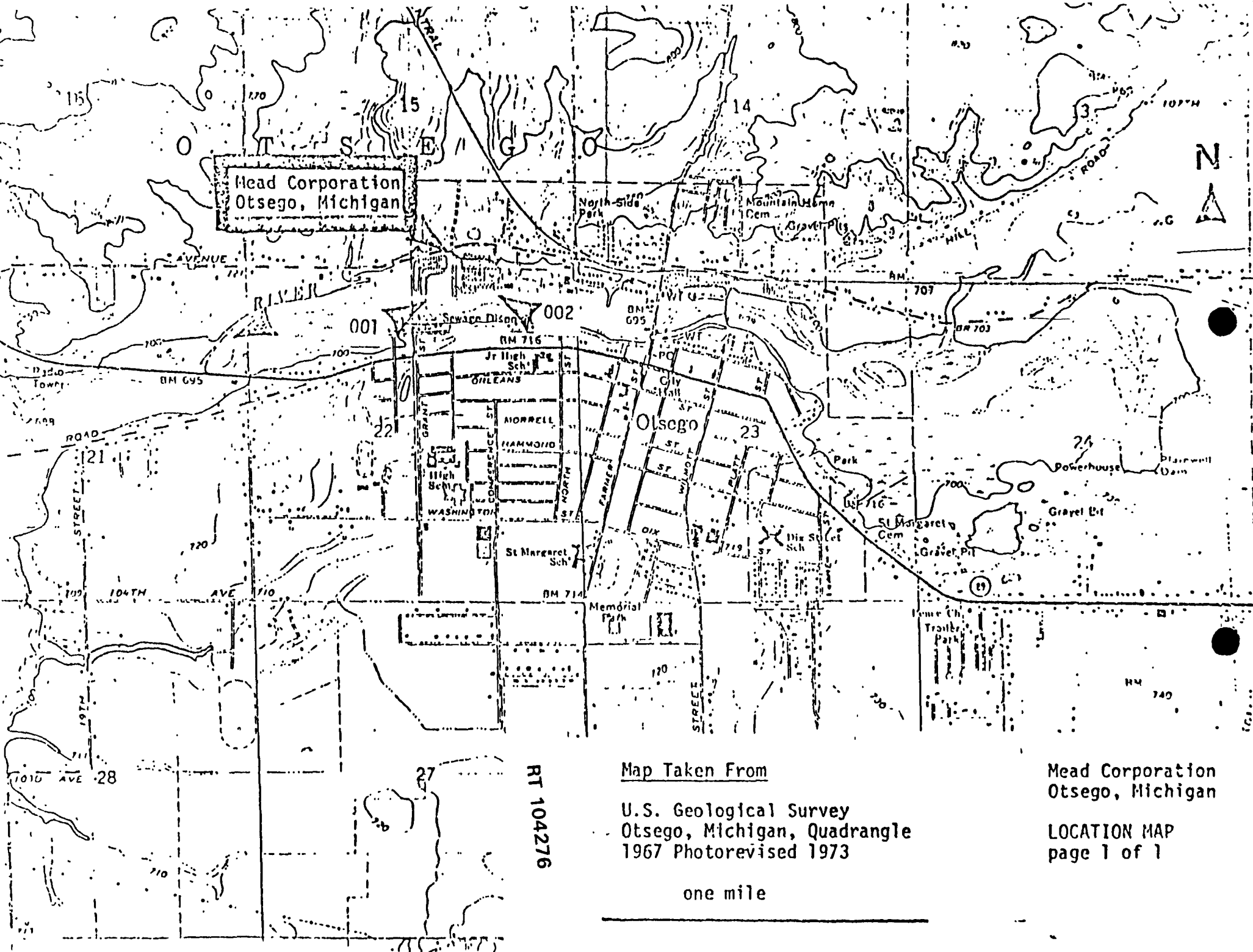
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RT 104274



RT 104275

Mead Corporation  
Otsego, Michigan



RT 104276

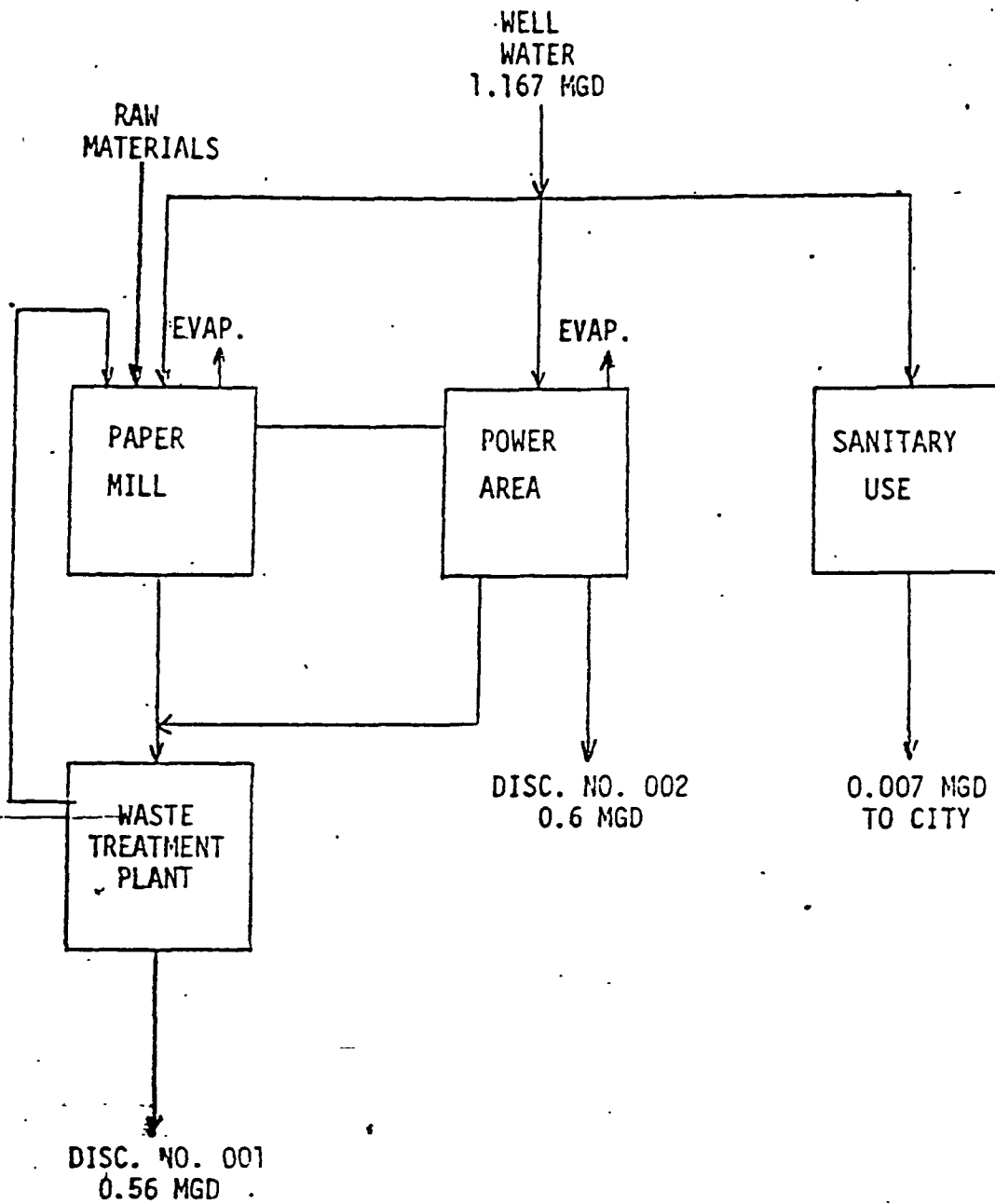
Map Taken From

U.S. Geological Survey  
Otsego, Michigan, Quadrangle  
1967 Photorevised 1973

one mile

Mead Corporation  
Otsego, Michigan

LOCATION MAP  
page 1 of 1



SCHEMATIC OF WATER FLOW  
MEAD CORPORATION  
OTSEGO, MICHIGAN

MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
ENVIRONMENTAL PROTECTION BUREAU  
POINT SOURCE STUDIES SECTION

Report of an  
Industrial Wastewater Survey  
Conducted at  
MEAD PAPER COMPANY  
All Outfalls No. 030016  
Allegan County  
July 10-11, 1978

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Monday, July 10, 1978.

The results of this survey met the final limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. MI0000787 (Table 3).

The survey results compared reasonably well with values reported by the company on its July 1978 Monthly Operating Report (Table 3).

Analyses of the sample split by the company's laboratory compared well with analyses done by the Environmental Protection Bureau Laboratory (Table 4).

A comparison of results of this survey to those at the previous survey (August 30, 1977) shows lower suspended solids and settleable solids concentrations (Table 5).

A grab sample from the company's sludge dewatering pit contained 20,000 ug/kg dry weight of PCB 1242 and 0.29% oil (Table 2).

Purpose of Survey

The purpose of the survey was to determine the quality and quantity of wastewater being discharged by Mead Paper Company, to the Kalamazoo River and to check for compliance with NPDES Permit No. MI0000787.

Plant Processes

Mead Corporation, Paperboard Products Division produces multi-ply paperboard for the publishing, furniture, mobile home and automotive industries. The mill's normal operation is 24 hours a day, 7 days per week employing about 200 people. Production during the survey was considered normal.

The mill receives baled secondary fibers (scrap paper) by rail and truck. This scrap paper is dumped into a hydropulper, sent through a cleaner, thickened, refined and put onto the 8-cylinder paper machine. The paper off the machine is laminated up to 5 plies (1/4 inch).

Water Supply, Wastewater & Treatment

Mead Paper Company, Paperboard Products Division obtains process, cooling, and domestic water from six wells. Water from the Kalamazoo River is used during a start up operation to fill the chests. The amount of river water needed during a start up ranges from 25,000 to 100,000 gallons. The domestic water for the mill's office is supplied by the city. The domestic wastewater from the office and most of the wastewater from the mill is discharged to the City of Otsego sanitary sewer system. Some domestic wastewater from the mill is discharged to a septic tank system.

Water used on the paper machines is chlorinated at the vats for slime control. The boiler water is treated using hot lime softening.

Wastewater due to boiler blowdown, softener backwash, compressor cooling, stock preparation, the paper machine, spills, plant equipment cleanup, floor drains and some surface runoff is pumped to two Infilco clarifiers operating in parallel. Sludge from the clarifiers and 70% of the effluent from the clarifiers is recycled back into the mill. The remaining 30% of the wastewater from the primary treatment system is pumped to two aerated lagoons which are followed by a settling lagoon. The effluent from the settling lagoon is discharged through the company's 9-inch Parshall flume to the Kalamazoo River, discharge 030059 (001).

Cooling waters used in the turbine house for cooling bearings at the air compressors, other non-contact cooling waters, and roof drainage flows are discharged untreated directly to the Kalamazoo River through outfall 030159 (006).

Excess sludge from the primary clarifiers is wasted to a sludge dewatering pit, located between the main building and the river (see Figure 1), during mill shut downs and periods of clarifier overload. The dewatered sludge is hauled away semi-annually to a company-owned landfill.

Survey Procedure

The flows and samples were obtained as follows:

<u>Outfalls</u>	<u>030059 (001)</u>	<u>030159 (006)</u>
<u>Flow Measurement</u>	17" rectangular weir. Company installed. Water level recorder.  Automatic air activated. Individual Grab	Company estimated.   Grab composite. Grab individual.

A water level recorder provides a continuous account of the liquid level of head above the weir or through a flume. A head versus time graph is obtained for the duration of the survey period. The total volume of wastewater over the weir or through the flume during the survey period is computed from the graph.

RT 104278

An automatic sampler composites samples at timed intervals. Samples may be proportional to the instantaneous flow over the weir or through the flume.

A submergible sampler obtains samples at a continuous rate.

A grab composite consists of a series of individual grabs composited into one sample.

The following formula was used to compute the kilograms per day of various wastewater constituents discharged:  $\text{kg/day} = \text{flow (M}^3/\text{d)} \times \text{conc. (mg/l)} \times 0.001$ .

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

Samples were preserved according to Table 6. The results of the physical and chemical analyses are presented in Tables 1 and 2.

# Mead Paper Company - Otsego

Table 1 Analyses of composite samples.

Outfalls	030059 (001)		030159 (006)	
Survey Period	From	7-10-78 - 1350	7-10-78 - 1530	7-11-78 - 1530
	To	7-11-78 - 1350	7-11-78 - 1530	
Computed flow rate* (M <sup>3</sup> /day)		2,150		(2,270)
Highest flow rate (M <sup>3</sup> /day)		2,230 - 7-10-78 @ 1350	--	--
Lowest flow rate (M <sup>3</sup> /day)		2,020 - 7-11-78 @ 1307	--	--
	mg/l	kg/day	mg/l	kg/day
5-day BOD	25	54	0.5	1
COD	250	540	4	9
Suspended solids	9	20	6	10
Dissolved solids	680	1,500	330	750
Settleable solids	< 9	--	--	--
Nitrite & nitrate nitrogen-N	0.33	0.71	--	--
Ammonia nitrogen-N	5.5	12	--	--
Organic nitrogen-N	5.0	10	--	--
Total phosphorus-P	1.0	2	--	--
Total copper (Cu)	< 0.01	--	< 0.01	--
Total zinc (Zn)	0.01	0.02	0.02	0.05
	ug/l			
PCB 1242	0.3			
PCB 1254	< 0.1			
PCB 1260	< 0.1			

\* Flow rates used in the computation of kg/day (obtained by Company).  
To obtain IGD multiply M<sup>3</sup>/day by 0.000264  
To obtain lbs/day multiply kg/day by 2.2046

# Mead Paper Company - Otsego

Table 2 Analyses of grab samples.

Date	Time	Temp. °C	pH	Oil & Grease mg/l	BOD <sub>5</sub> mg/l	Susp. solids mg/l	Diss. solids mg/l	Nitrite & nitrate nitrogen mg/l	Ammonia nitrogen mg/l	Organic nitrogen mg/l	Total phosphorus mg/l	Copper mg/l	Zinc mg/l
030059 (001)													
7-10-78	2300	24	7.9	5	25	12	680	0.27	5.5	4.3	0.99	0.01	0.1
7-11-78	0740	21.5	8.1	7	25	11	870	0.26	5.5	4.6	1.0	< 0.01	0.0
030159 (006)													
7-10-78	2340	17	8.0	4	< 0.5	< 1	330	--	--	--	--	< 0.01	0.0
7-11-78	0800	17	8.3	1	< 0.5	< 1	330	--	--	--	--	< 0.01	0.0
Sludge Pit													
7-11-78	1445	22	170	20,000	< 500	< 500	0.1						

1 - Values determined in the field at time of sampling.

Table 3 Comparison of survey results with the facility's NPDES Permit and Monthly Operating Report.

Parameter (Unit)	NPDES Permit Final Limitations			July Monthly Operating Report				Survey Results	
	Daily Average	Daily Maximum	Monthly Average	Monthly Maximum	7-10-78	7-11-78	Composite	1st	2nd
030059 (001)									
Flow (M <sup>3</sup> /day)	--	--	2,210	2,780	2,140	2,040	2,150	--	--
Settleable solids (mg/l)	--	--	4	15	0	14	< 9	--	--
BOD <sub>5</sub> (kg/day)	295	455	67	103	60	85	54	--	--
Suspended solids (kg/day)	295	455	50	184	60	4.1	20	--	--
pH (S.U.)	not <6.5 nor >9.5		7.3 min.	7.6	7.4	7.3	--	7.9	8
030159 (006)									
Flow (M <sup>3</sup> /day)	--	--	2,270	2,270	--	--	2,270	--	--
Suspended solids (mg/l)	--	--	1	3	--	--	6	< 1	< 1
Oil & Grease (visual)	--	--	0	1	1	0	--	--	--
Oil & Grease (mg/l)	--	--	--	--	--	--	--	4	1
Temperature (°C)	--	--	20	25.5	--	--	--	17	17
pH (S.U.)	not <6.5 nor >9.5		7.1 min.	7.7	--	--	--	8.0	8

To obtain MGD multiply M<sup>3</sup>/day by 0.000264

To obtain lbs/day multiply kg/day by 2.2046

Table 4 Comparison of the laboratory analytical results obtained by Head Paper Company and the Environmental Protection Bureau from the split composite samples.

Outfall	030059 (001)		030159 (006)	
	E.P.B.		E.P.B.	
	Head Paper	Head Paper	Head Paper	Head Paper
*Flow (M <sup>3</sup> /day)	2,150	2,090	(2,270)	2,270
	mg/l	mg/l	mg/l	mg/l
5-day BOD	25	22	--	--
Suspended solids	9	12	6	0
Settleable solids	< 9	10	--	--

\* Flow obtained from company totalizer.

Table 5 Comparison of the previous survey results with the results obtained in this survey.

Outfalls	030059 (001)		030159 (005)	
	Survey Date		Survey Date	
	From	To	From	To
	8-30-77	7-10-78	8-30-77	7-10-78
	8-31-77	7-11-78	8-31-77	7-11-78
Flow Rate (M <sup>3</sup> /day)	2,740	2,150	--	2,270
	mg/l	mg/l	mg/l	mg/l
5-day BOD	32	25	--	--
COD	200	250	--	--
Suspended solids	45	9	6	6
Dissolved solids	--	--	360	330
Settleable solids	32	< 9	--	--
Nitrite & nitrate nitrogen-N	0.47	0.33	--	--
Ammonia nitrogen-N	1.9	5.5	--	--
Organic nitrogen-N	5.9	5.0	--	--
Total phosphorus-P	1.2	1.0	--	--
Total copper (Cu)	0.01	< 0.01	0.02	< 0.01
Total zinc (Zn)	0.08	0.01	< 0.01	0.02

STATE OF MICHIGAN



NATURAL RESOURCES COMMISSION  
THOMAS J. ANDERSON  
MARLENE J. FLUHARTY  
GORDON E. GUYER  
KERRY KAMMER  
O. STEWART MYERS  
DAVID D. OLSON  
RAYMOND POUPORE

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

GORDON GUYER, DIRECTOR  
District 12 Headquarters  
Box 355, Plainwell, Michigan 49080

April 21, 1987

Barbara Cichon  
Technical Director  
Mead Paper Products  
431 Helen Avenue  
Otsego, Michigan 49078

RE: Compliance Sampling Inspection (CSI)

Dear Ms. Cichon:

Enclosed are the results of analysis of the CSI performed at Mead Paper Products on October 6 & 7, 1986.

Table 3 of the report indicates that the facility meets the limitations set in the NPDES permit. A comparison of split sample analysis in Table 4 shows that the Mead results are consistently higher than those of the EPB Lab.

The results of analysis compare favorably with the previous survey, Table 5. The one exception is the phosphorus in outfall 002. The twelvefold increase seems to indicate a change in cooling water additives. Please investigate this increase and report your findings to this office not later than May 5, 1987.

If, in the meantime, you have any questions in this matter, please contact me at this office.

Sincerely,

SURFACE WATER QUALITY

John Bantjes  
Plainwell District  
616-685-9886

CC: Wayne  
Mike K.  
Dave K.  
Bob D.  
Will Lapp

JB/cmb

Enclosures

4-21-87.jb

RT 104320

(1)

MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
ENVIRONMENTAL PROTECTION BUREAU  
POINT SOURCE MONITORING SECTION

Report of a  
Industrial Wastewater Survey  
Conducted at

MEAD CORPORATION  
All Outfalls No. 030016  
NPDES No. MI 0000787  
Allegan County  
Otsego, Michigan  
October 6 and 7, 1986

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting, Monday, October 6, 1986.

The results of this survey met the final limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. MI 0000787.

Survey Procedure

The flows and samples were obtained as follows:

<u>Sample Description</u>	<u>Flow Measurement</u>	<u>Sampling Methods</u>
030059 (001) Process water, collected at discharge from lagoon.	Company totalizer	Submergible composite sampler & individual grab samples.
030250 (002)-Cooling water, collected at weir prior to discharge to river	Staff & company unable to obtain flow due to flooding in river.	Submergible composite sampler & individual grab samples.

A submergible sampler obtains samples at a continuous rate.

Extractable organic composite samples are collected by the grab composite method.

A grab composite consists of a series of individual grabs composited into one sample.

An individual grab is a single instantaneous sample.

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

RT 104321

## MEAD Corporation

Samples were preserved according to Table 6. The results of the physical, chemical and bacteriological analyses are presented in Tables 1 & 2. Letter codes for laboratory results are defined in Table 6. A parameter listing for the organic scans is presented in Table 7. Unless otherwise specified all parameters in the scan were analyzed.

Table 1 Analyses of composite samples.

Outfalls		030059 (001)	030250 (002)
Survey Period	From	10-6-86 0945	10-6-86 0930
	To	10-7-86 0945	10-7-86 0930
Computed flow rate (MGD)		(0.67)	---

	mg/l	lbs/day	mg/l	lbs/day
Suspended solids	16	89	<4	
Dissolved solids	600	3000	470	
Settleable solids				
BOD <sub>5</sub>	34	190	--	
COD <sub>5</sub>	180	1000	10	
TOC	57.	320	1.41	
Nitrite & nitrate nitrogen-N	0.04DS	0.20	0.09	
Ammonia nitrogen-N	1.1	6.1	0.05	
Kjeldahl nitrogen-N	3.7	21	0.26	
Total phosphorus-P (Effluent)	0.31	1.7	0.82	
	ug/l	lbs/day	ug/l	lbs/day
Phenols	34	0.19	--	
Total aluminum (Al)	460	2.6	110	
Total cadmium (Cd)	<20	--	<20	
Total chromium (Cr)	<50	--	<50	
Total copper (Cu)	<20	--	<20	
Total iron (Fe)	350	2.0	470	
Total nickel (Ni)	<50	--	<50	
Total lead (Pb)	<50	--	<50	
Total Titanium (Ti)	<25	--	<25	
Total zinc (Zn)	<50	--	<50	

1 - Flow rates used in the computation of lbs/day.

Figure shown in ( ) obtained from company totalizer.

(3)

MEAD Corporation

SCAN 3 - Chlorinated Hydrocarbons, Poly-  
chlorinated Biphenyl & Organo-  
chlorine Pesticides

Outfalls 030059 (001)  
ug/l lbs/day

g-BHC (lindane)	
2-Chloronaphthalene	
1,2-Dichlorobenzene	<0.1
1,3-Dichlorobenzene	
1,4-Dichlorobenzene	
1,2,4-Trichlorobenzene	<0.5BLK, INT
Aroclor 1242	
Aroclor 1254	<0.1
Aroclor 1260	
Others	<0.01

Table 2 Analyses of grab sample(s).

Outfall	030059(001)	Date & Time 10-6-86 1010	Date & Time 10-6-86 1910
Temp 1 F		58	60
pH 1 S.U.		7.6	7.6
Cl 1	mg/l	U	U
Suspended Solids	mg/l	570	20
Dissolved Solids	mg/l	580	590
BOD <sub>5</sub>	mg/l	62	36
COD <sub>5</sub>	mg/l	170	180
TOC	mg/l	51.	49.
NO3 & NO2	mg/l	0.07DS	0.04DS
NH3	mg/l	1.1	1.1
Kjeldahl nitrogen	mg/l	3.9	3.8
Total Phosphorus	mg/l	0.34	0.33
Phenols	ug/l	50	55
Aluminum (Al)	ug/l	410	440
Total cadmium (Cd)	ug/l	<20	<20
Total chromium (Cr)	ug/l	<50	<50
Total copper (Cu)	ug/l	<20	<20
Total iron (Fe)	ug/l	330	310
Total nickel (Ni)	ug/l	<50	<50
Total lead (Pb)	ug/l	<50	<50
Total Titanium	ug/l	<25	<25
Total zinc (Zn)	ug/l	<50	<50

RT 104323

(4)

MEAD Corporation

Table 2 Analyses of grab sample(s).

Outfall 030059 (001)		Date & Time 10-6-86 1010	Date & Time 10-6-86 1910
-----			
Oil & Grease Grav.	mg/l	13	<2.0
SCAN 1 - Purgeable Halocarbons			
-----			
Chlorobenzene	ug/l	<25	
Methylene chloride	ug/l	<25	
Others	ug/l	<5.0	
SCAN 2 - Purgeable Aromatic Hydrocarbons			
-----			
Benzene	ug/l	>	<25
Ethylbenzene	ug/l		
Toluene	ug/l		
Xylene isomers (o,m,and p)	ug/l		

Table 2 Analyses of grab sample(s).

Outfall 030250(002)		Date & Time 10-6-86 0940	Date & Time 10-6-86 1925
-----			
Temp 1 F		57	65
pH 1 S.U.		7.5	7.6
Cl 1	mg/l	U	U
Oil & Grease Grav.	mg/l	<2.0	<2.0
SCAN 1 - Purgeable Halocarbons			
-----			
Chlorobenzene	ug/l	<25	
Methylene chloride	ug/l	<25	
Others	ug/l	<5.0	
SCAN 2 - Purgeable Aromatic Hydrocarbons			
-----			
Benzene	ug/l	>	<25
Ethylbenzene	ug/l		
Toluene	ug/l		
Xylene isomers (o,m,and p)	ug/l		

RT 104324

MEAD Corporation

Table 3 Comparison of survey results with the facility's NPDES Permit and Monthly Operating Report.

Outfall	Parameter (Unit)	Final NPDES Permit/Limitations		October Monthly Operating Report				Survey Results <sup>1</sup>
		Monthly Avg.	Daily Max.	Monthly Average	Monthly Maximum	10-6-86	10-7-86	
030059 (001)	Flow (MGD)	--	--	0.714	0.956	0.671	0.656	0.67
	BOD <sub>5</sub> lbs/day	650	1300	434	675	274	284	190
	Suspended Solids lbs/day	650	1300	218	500	34	164	89
	pH (SU)	not <6.0 nor >9.0		min 6.9	7.6	7.5	7.5	(7.6, 7.6)
	Total Phosphorus mg/l			0.48	0.51	0.51	--	0.31 (0.34, 0.33)
030250 (002)	Flow (MGD)			0.323	0.407	--	--	
	Temperature (°F)			61	65	--	--	(57, 65)
	pH (SU)	not <6.0 nor >9.0		min 7.0	7.5	--	--	(7.5, 7.6)

<sup>1</sup> - Survey results are for the composite sample.  
 Grab sample results are shown in parentheses ( ).

(6)

MEAD Corporation

Table 4 Comparison of the laboratory analytical results obtained by Mead Corporation-Otsego and the Environmental Protection Bureau from the split composite sample.

Outfall 030059 (001)  
Sample Date 10-6-86 to 10-7-86

Flow <sup>1</sup> (MGD)	Mead	E.P.B.
	mg/l	
BOD <sub>5</sub>	48	34
Suspended Solids	24	16
Total Phosphorus	0.51	0.31

Table 5 Comparison of the previous survey results with the results obtained in this survey.

Outfalls Survey Period From To Computed Flow Rate (MGD)	030059 (001)		030250 (002)	
	1-7-85	10-6-86	1-7-85	10-6-86
	1-8-85	10-7-86	1-8-85	10-7-86
	0.42	0.67	-	-
	mg/l	mg/l	mg/l	mg/l
Suspended solids	77 -	16	<4 -	--
Dissolved solids			330 -	470
BOD <sub>5</sub>	61 -	34	<3 -	--
TOC <sub>5</sub>	57 -	57	1.2 -	1.4
Nitrite & nitrate nitrogen-N	0.13 -	0.04DS	0.06 -	0.09
Ammonia nitrogen-N	4.7 -	1.1	0.02 -	0.05
Kjeldahl nitrogen-N	12 -	3.7	0.12 -	0.26
Total phosphorus-P (effluent)	0.88 -	0.31	0.07 -	0.82
	ug/l		ug/l	
Total aluminum (Al)	410 -	460	<100 -	110
Total cadmium (Cd)	<20 -	<20	<20 -	<20
Total chromium (Cr)	<50 -	<50	<50 -	<50
Total copper (Cu)	<20 -	<20	<20 -	<20
Total nickel (Ni)	<50 -	<50	<50 -	<50
Total lead (Pb)	<50 -	<50	<50 -	<50
Total titanium	210 -	<25	170 -	<25
Total zinc (Zn)	<50 -	<50	<50 -	<50

RT 104326

## MEAD Corporation

Table 5 Comparison of the previous survey results with the results obtained in this survey.



Outfalls	030059 (001)		030250 (002)	
Survey Period From	1-7-85	10-6-86	1-7-85	10-6-86
To	1-8-85	10-7-86	1-8-85	10-7-86
<hr/>				
	ug/l	ug/l		
<hr/>				
SCAN 3-Chlorinated Hydrocarbons				
Polychlorinated Biphenyl				
& Organochlorine Pesticides				
<hr/>				
2-Chloronaphthalene		<0.12	<0.1	
1,2-Dichlorobenzene				
1,3-Dichlorobenzene				
1,4-Dichlorobenzene				
1,2,4-Trichlorobenzene			<0.5	
Aroclor 1242	PCB's		<0.12	<0.1
Aroclor 1254	PCB's			
Aroclor 1260	PCB's			
BP-6 (PBB)		<0.04	<0.1	
All Others		<0.01	<0.1	

Table 6 Sample Preservation

Parameter	Preservative
COD/TOC/Phenol/Nutrients (Chlorine Absent)	5 drops conc. $H_2SO_4$ /250 ml (to pH <2).
Phenols (Chlorine Present)	Dechlorinated w/ferrous ammonium sulfate (0.141 N) 1 drop/mg/l $Cl_2$ /250ml. $H_2SO_4$ to pH <2.
Cyanide/Thiocyanates	Dechlorinate if needed with ascorbic acid (0.6 g/l, 10 drops 10 N NaOH (to pH $\geq 12$ )/250 ml.
D.O.	Fixed on site.
Total Metals	2 ml 1:1 $HNO_3$ /250 ml (to pH <2).
Dissolved Metals (Field Filtered)	2 ml 1:1 $HNO_3$ /250 ml (to pH <2).
Microbiology	2 drops 10% sodium thiosulfate/125 ml to dechlorinate sample.
Oil & Grease	10 drops conc. $H_2SO_4$ /250 ml (to pH <2).

Mead Corporation  
Table 6 Continued

Sulfides	10 drops 1M ZnAc/250 ml., 1 drop 10N NaOH to pH9/250 ml.
Base-neutral & Acid Extractables Purgeable Organics	Dechlorinated (if needed) with sodium thiosulfate (1 drop 0.141 N/mg/l $\text{Cl}_2$ /250 ml).

Samples preserved as required, cooled to 4°C with chain of custody maintained.

Lab Letter Codes

- DS - Sample was diluted due to other high values on a multi-channel analytical system.
- BLK- No value reported because the laboratory blank was greater than half of the detection limit and greater than half of the quantified value.
- INT- Interference encountered during analysis resulted in no obtainable value.
- U - Indicates material was analyzed for but not detected. In the case of species, U indicated undetermined sex.

Survey by: Joseph Hey, Water Quality Technician  
Chris Little, Water Quality Technician

Contact with Management: Barb Cichon

Certified Operator: David Keith

Laboratory Analyses by: Environmental Protection Bureau Laboratory

Report by: Joe Hey, Brock Howard  
Grand Rapids District Office  
Surface Water Quality Division  
Environmental Protection Bureau  
Michigan Department of Natural Resources

Mead Corporation

Table 7

## ORGANIC SCAN PARAMETER LISTING

Cross out appropriate scans

SCAN 1 - Purgeable Halocarbons

Bromodichloromethane	cis-1,2-Dichloroethene
Bromoform	trans-1,2-Dichloroethene
Carbon tetrachloride	1,3-Dichloropropene
Chlorobenzene	Methylene chloride (request only)
Chloroform	1,1,2,2-Tetrachloroethane
Dibromochloromethane	Tetrachloroethene
1,1-Dichloroethane	1,1,1-Trichloroethane
1,2-Dichloroethane	1,1,2-Trichloroethane
1,1-Dichloroethene	Trichloroethene

SCAN 2 - Purgeable Aromatic Hydrocarbons

Benzene	Toluene
Ethylbenzene	Xylene isomers (o, m, and p)

SCAN 3 - Chlorinated Hydrocarbons, Polychlorinated Biphenyl & Organochlorine Pesticides

g-BHC (lindane)	Hexachlorobutadiene
2-Chloronaphthalene	Hexachlorocyclopentadiene
1,2-Dichlorobenzene	Hexachloroethane
1,3-Dichlorobenzene	Octachlorocyclopentene
1,4-Dichlorobenzene	Pentachloronitrobenzene
Hexachlorobenzene	1,2,4-Trichlorobenzene
Aroclor 1242	4,4'-DDE
Aroclor 1254	1,4'-DDT
Aroclor 1260	4,4'-DDT
Aldrin	Heptachlor
BP-6 (PBB)	Heptachlor epoxide
a-Chlordane	Hexabromobenzene
g-Chlordane	Methoxychlor
4,4'-DDD	Mirex

ANNUAL PCB REPORT

*Otsego, MI - Mad Paperboard Products*

FOR THE CALENDER YEAR OF: 1978

*July - Dec*

PCB TRANSFORMERS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>1</u>	<u>1</u>
Total PCB Fluid (gal)	<u>425</u>	<u>425</u>
Total PCB Fluid (kg)	<u>2495</u>	<u>2495</u>

PCB CAPACITORS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>29</u>	<u>29</u>
Total PCB Fluid (gal)	<u>55.5</u>	<u>55.5</u>
Total PCB Fluid (kg)	<u>327.6</u>	<u>327.6</u>

OTHER PCB EQUIPMENT/ITEMS

PCBs AND PCB ITEMS REMOVED FROM SERVICE: (list item, date and PCB quantity)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LOCATION OF INI

\_\_\_\_\_  
\_\_\_\_\_

FINAL DISPOSAL |

\_\_\_\_\_  
\_\_\_\_\_

*1972 - 1980*

*Produce.*

COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

11-11-79  
10/1/79

ANNUAL PCB REPORT

FOR THE CALENDER YEAR OF: 1979

PCB TRANSFORMERS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>1</u>	<u>1</u>
Total PCB Fluid (gal)	<u>425</u>	<u>425</u>
Total PCB Fluid (kg)	<u>2495</u>	<u>2495</u>

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Total PCB Fluid (gal)	<u>55.5</u>	<u>55.5</u>
Total PCB Fluid (kg)	<u>327.6</u>	<u>327.6</u>

OTHER PCB EQUIPMENT/ITEMS

PCBs AND PCB ITEMS REMOVED FROM SERVICE: (list item, date and PCB quantity)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LOCATION OF INITIAL STORAGE FACILITY: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

FINAL DISPOSAL FACILITY: (attach relative correspondence) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

*Fred Paperboard Products  
Chicago, Michigan*

ANNUAL PCB REPORT

FOR THE CALENDER YEAR OF: 1980

PCB TRANSFORMERS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>1</u>	<u>1</u>
Total PCB Fluid (gal)	<u>425</u>	<u>425</u>
Total PCB Fluid (kg)	<u>2495</u>	<u>2495</u>

PCB CAPACITORS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>29</u>	<u>29</u>
Total PCB Fluid (gal)	<u>55.5</u>	<u>55.5</u>
Total PCB Fluid (kg)	<u>327.6</u>	<u>327.6</u>

OTHER PCB EQUIPMENT/ITEMS

PCBs AND PCB ITEMS REMOVED FROM SERVICE: (list item, date and PCB quantity)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LOCATION OF INITIAL STORAGE FACILITY: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

FINAL DISPOSAL FACILITY: (attach relative correspondence) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

RT 104048

Mead Paperboard Products  
Otsego, MI

ANNUAL PCB REPORT

FOR THE CALENDER YEAR OF: 1981

PCB TRANSFORMERS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>1</u>	<u>1</u>
Total PCB Fluid (gal)	<u>425</u>	<u>425</u>
Total PCB Fluid (kg)	<u>2495</u>	<u>2495</u>

PCB CAPACITORS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>29</u>	<u>29</u>
Total PCB Fluid (gal)	<u>55.5</u>	<u>55.5</u>
Total PCB Fluid (kg)	<u>327.6</u>	<u>327.6</u>

OTHER PCB EQUIPMENT/ITEMS

PCBs AND PCB ITEMS REMOVED FROM SERVICE: (list item, date and PCB quantity)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LOCATION OF INITIAL STORAGE FACILITY: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

FINAL DISPOSAL FACILITY: (attach relative correspondence) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Meat Superboard Products  
Orrego, Michigan

ANNUAL PCB REPORT

FOR THE CALENDER YEAR OF: 1982

PCB TRANSFORMERS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>1</u>	<u>1</u>
Total PCB Fluid (gal)	<u>425</u>	<u>425</u>
Total PCB Fluid (kg)	<u>2495</u>	<u>2495</u>

PCB CAPACITORS IN SERVICE:

Number:	<u>29</u>	<u>29</u>
Total PCB Fluid (gal)	<u>55.5</u>	<u>55.5</u>
Total PCB Fluid (kg)	<u>327.6</u>	<u>327.6</u>

OTHER PCB EQUIPMENT/ITEMS

PCBs AND PCB ITEMS REMOVED FROM SERVICE: (list item, date and PCB quantity)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LOCATION OF INITIAL STORAGE FACILITY: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

FINAL DISPOSAL FACILITY: (attach relative correspondence) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

RT 104050

ANNUAL PCB REPORT

*Mead Paper Load Products*  
*0 tags*

FOR THE CALENDER YEAR OF: 1983

PCB TRANSFORMERS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>1</u>	<u>1</u>
Total PCB Fluid (gal)	<u>425</u>	<u>425</u>
Total PCB Fluid (kg)	<u>2495</u>	<u>2495</u>

PCB CAPACITORS IN SERVICE:

Number:	<u>29</u>	<u>29</u>
Total PCB Fluid (gal)	<u>55.5</u>	<u>55.5</u>
Total PCB Fluid (kg)	<u>327.6</u>	<u>327.6</u>

OTHER PCB EQUIPMENT/ITEMS

PCBs AND PCB ITEMS REMOVED FROM SERVICE: (list item, date and PCB quantity)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LOCATION OF INITIAL STORAGE FACILITY: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

FINAL DISPOSAL FACILITY: (attach relative correspondence) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

ANNUAL PCB REPORT

Otsego

FOR THE CALENDAR YEAR OF: 1984

## PCB TRANSFORMERS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>1</u>	<u>1</u>
Total PCB Fluid (gal)	<u>425</u>	<u>425</u>
Total PCB Fluid (kg)	<u>2495</u>	<u>2495</u>

## PCB CAPACITORS IN SERVICE:

Number:	<u>29</u>	<u>29</u>
Total PCB Fluid (gal)	<u>55.5</u>	<u>55.5</u>
Total PCB Fluid (kg)	<u>327.6</u>	<u>327.6</u>

## OTHER PCB EQUIPMENT/ITEMS

PCBs AND PCB ITEMS REMOVED FROM SERVICE: (list item, date and PCB quantity)

LOCATION OF INITIAL STORAGE FACILITY: \_\_\_\_\_

FINAL DISPOSAL FACILITY: (attach relative correspondence) \_\_\_\_\_

COMMENTS: \_\_\_\_\_

Meat Paperboard Products  
Otsego, MI

ANNUAL PCB REPORT

FOR THE CALENDER YEAR OF: 1985

PCB TRANSFORMERS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>1</u>	<u>1</u>
Total PCB Fluid (gal)	<u>425</u>	<u>425</u>
Total PCB Fluid (kg)	<u>2445</u>	<u>2445</u>

PCB CAPACITORS IN SERVICE:

Number:	<u>29</u>	<u>29</u>
Total PCB Fluid (gal)	<u>55.5</u>	<u>55.5</u>
Total PCB Fluid (kg)	<u>327.6</u>	<u>327.6</u>

OTHER PCB EQUIPMENT/ITEMS

<u>—</u>	<u>—</u>
----------	----------

PCBs AND PCB ITEMS REMOVED FROM SERVICE: (list item, date and PCB quantity)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LOCATION OF INITIAL STORAGE FACILITY: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

FINAL DISPOSAL FACILITY: (attach relative correspondence) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

RT 104053

ANNUAL PCB REPORT

FOR THE CALENDER YEAR OF: 1986

JULY - JULY 87

PCB TRANSFORMERS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>1</u>	<u>1</u>
Total PCB Fluid (gal)	<u>425</u>	<u>425</u>
Total PCB Fluid (kg)	<u>2495</u>	<u>2495</u>

PCB CAPACITORS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>41</u>	<u>1</u>
Total PCB Fluid (gal)	<u>77.9</u>	<u>1.9</u>
Total PCB Fluid (kg)	<u>459.2</u>	<u>11.2</u>

OTHER PCB EQUIPMENT/ITEMS

- -

PCBs AND PCB ITEMS REMOVED FROM SERVICE: (list item, date and PCB quantity)

40 (1.9gal) CAPACITORS were put out of service on  
March 6, 1987, packaged into 8 drums & disposed  
of on March 12, 1987. Total Quantity = 76gal

LOCATION OF INITIAL STORAGE FACILITY: General Electric Co.  
4477 East 49<sup>th</sup> Street  
Cleveland, OH

FINAL DISPOSAL FACILITY: (attach relative correspondence) EnviroSafe Services of Idaho  
10 1/2 MILES, NW, GRANDVIEW, ID 83634

COMMENTS: 12 additional 1.9-2 gal capacitors were  
found in service & removed along with  
the other 28.

# ANNUAL PCB REPORT

FOR THE CALENDER YEAR OF: 1987

JULY 87 - DEC 87

## PCB TRANSFORMERS IN SERVICE:

	<u>Beginning of Year</u>	<u>End of Year</u>
Number:	<u>1</u>	<u>0</u>
Total PCB Fluid (gal)	<u>426</u>	<u>0</u>
Total PCB Fluid (kg)	<u>2495</u>	<u>0</u>

## PCB CAPACITORS IN SERVICE:

Number:	<u>1</u>	<u>0</u>
Total PCB Fluid (gal)	<u>1.9</u>	<u>0</u>
Total PCB Fluid (kg)	<u>11.2</u>	<u>0</u>

## OTHER PCB EQUIPMENT/ITEMS

	<u>-</u>	<u>-</u>
--	----------	----------

PCBs AND PCB ITEMS REMOVED FROM SERVICE: (list item, date and PCB quantity)

1 PCB TRANSFORMER REMOVED + DISPOSED OF ALONG  
WITH 1 CAPACITOR ON 12-28-87. A TOTAL  
OF 426.9 GAL / 2506.2 KG DISPOSED OF.

LOCATION OF INITIAL STORAGE FACILITY: General Electric Co.

4477 EAST 49TH STREET, CLEVELAND, OHIO

FINAL DISPOSAL FACILITY: (attach relative correspondence) \_\_\_\_\_

COMMENTS: \_\_\_\_\_

RT 104055



# HAZLETON

LABORATORIES AMERICA, INC.

9200 LEESBURG TURNPIKE, VIENNA, VIRGINIA 22180, U.S.A.

SEP 6 1978

August 30, 1978

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49087

Dear Mr. Stoltz:

The following analytical results were obtained from the three (3) water samples which you recently submitted for PCB analysis.

<u>Sample Identification</u>	<u>Aroclor 1242 ppb</u>	<u>Aroclor 1254 ppb</u>
Upriver	<0.05	<0.05
Downriver	<0.05	<0.40
Outfall	<0.05	<0.20

Total PCB's do not exceed values listed for separate compounds. If you have any questions regarding the above data, please contact me.

Sincerely,

JIM T. HILL, Ph.D.  
Director of Chemistry

JTH:phb  
J. Diggs J.D.  
HLA Notebook No. 95, p. 19

RT 104056



# HAZLETON

LABORATORIES AMERICA, INC.

9200 LEESBURG TURNPIKE, VIENNA, VIRGINIA 22180, U.S.A.

August 21, 1978

Mr. J.E. Stoltz  
Technical Director  
Mead Paperboard Products  
P.O. Box 187  
Otsego, Michigan 49087

Dear Mr. Stoltz:

The following analytical results were obtained from the three (3) water samples which you recently submitted for PCB analysis.

<u>Sample</u> <u>Identification</u>	<u>PCB's</u> <u>1242</u> ppb	<u>PCB's</u> <u>1254</u> ppb	<u>Total</u> <u>PCB's</u> ppb
Upriver	<0.05	<0.10	<0.10
Downriver	<0.05	<0.05	<0.05
Effluent	<0.05	<0.05	<0.05

If you have any questions regarding the above data, please contact me.

Sincerely yours

JIM T. HILL, Ph.D.  
Director of Chemistry

JTH/ljw  
J. Diggs J.D.  
HLA Notebook No. 95, p. 19

RT 104057



# HAZLETON

LABORATORIES AMERICA, INC.

9200 LEESBURG TURNPIKE, VIENNA, VIRGINIA 22180, U S A

JUL 24 1978

July 18, 1978

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49087

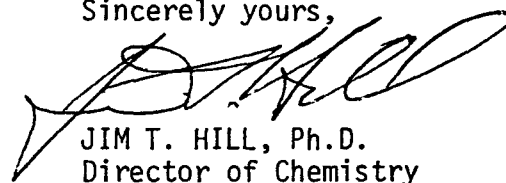
Dear Mr. Stoltz:

The following analytical results were obtained from the three (3) water samples which you recently submitted for PCB analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>
Mead Outfall	<0.05	<0.05	<0.05
Upriver	<0.05	<0.05	<0.05
Downriver	<0.05	<0.05	<0.05

If you have any questions regarding the above data, please contact me.

Sincerely yours,



JIM T. HILL, Ph.D.  
Director of Chemistry

JTH:phb  
J. Diggs  
HLA Notebook No. 95, p. 17

RT 104058



# HAZLETON

LABORATORIES AMERICA, INC.

9200 LEESBURG TURNPIKE, VIENNA, VIRGINIA 22180, U.S.A.

JUN 16 1978

June 13, 1978

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Dear Mr. Stoltz:

The following analytical results were obtained from the three (3) water samples which you recently submitted for PCB analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>
6/6/78 Mead Outfall	.18	.60	.78
Upriver	.30	.29	.59
Downriver	.29	.24	.53

If you have any questions regarding the above data, please contact me.

Sincerely yours,

ROY M. DAGNALL, Ph.D., D.Sc.  
Director of Research

RMD:phb  
HLA Notebook No. 95, p. 16

RT 104059



# HAZLETON

LABORATORIES AMERICA, INC.

9200 LEESBURG TURNPIKE, VIENNA, VIRGINIA 22180, U S A

MAY 22 1978

May 19, 1978

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Dear Mr. Stoltz:-

The following analytical results were obtained from the three (3) water samples which you recently submitted for PCB analysis.

<u>Sample Identification</u>	<u>Total PCB's ppb</u>
Upriver	0.14
Downriver	0.14
Outfall	0.22

If you have any questions regarding the above data, please contact me.

Sincerely yours,

ROY M. DAGNALL, PH.D., D.Sc.  
Director of Research

RMD:phb  
HLA Notebook No. 95, p. 14

RT 104060



# HAZLETON

LABORATORIES AMERICA, INC.

9200 LEESBURG TURNPIKE, VIENNA, VIRGINIA 22180, U.S.A.

0 2 1978

May 4, 1978

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Dear Mr. Stoltz:

The following analytical results were obtained from the three (3) water samples which you recently submitted for PCB analysis.

<u>Sample Identification</u>	<u>Total PCB's ppb</u>
Upstream	<0.05
Downstream	<0.05
Outfall	<0.05

If you have any questions regarding the above data, please contact me.

Sincerely yours,

ROY M. DAGNALL, Ph.D., D.Sc.  
Director of Research

RMD:phb  
HLA Notebook No. 95, p. 13

RT 104061



**HAZLETON**

LABORATORIES AMERICA, INC.

9200 LEESBURG TURNPIKE, VIENNA, VIRGINIA 22180, U.S.A.

APR 24 1978

April 19, 1978

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Dear Mr. Stoltz:

The following analytical results were obtained from the six (6) water samples which you recently submitted for PCB analysis.

<u>Sample Identification</u>	<u>Total PCB's ppb</u>
Upriver	<0.05
Downriver	<0.05
Effluent	<0.05
Upriver 4/12/78	<0.05
Downriver 4/12/78	<0.05
Effluent 4/12/78	<0.05

If you have any questions regarding the above data, please contact me.

Sincerely yours,

ROY M. DAGMELL, Ph.D., D.Sc.  
Director of Research

RMD:cnt  
HLA Notebook No. 95, pp. 12-13

RT 104062



# HAZLETON

LABORATORIES AMERICA, INC.

9200 LEESBURG TURNPIKE, VIENNA, VIRGINIA 22180, U.S.A.

February 7, 1978

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Dear Mr. Stoltz:

The following analytical results were obtained from the three (3) water samples which you recently submitted for PCB analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>
Mead 1-18-78			
Upstream	<.05	.10	.10
Downstream	<.05	<.05	<.05
Effluent	<.05	<.05	<.05

If you have any questions regarding the above data, please contact me.

Sincerely yours,

RICHARD P. STANOVICK  
Director  
Chemistry Department

RPS:phb  
HLA Notebook No. 95, p. 8

RT 104063



# HAZLETON

LABORATORIES AMERICA, INC.

9200 LEESBURG TURNPIKE, VIENNA, VIRGINIA 22180, U.S.A.

January 6, 1978

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Dear Mr. Stoltz:

The following analytical results were obtained from the three (3) water samples which you recently submitted for PCB analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>
Mead 12/29/77			
Upriver	<.05	<.05	<.05
Outfall	<.05	.12	.12
Downriver	<.05	.12	.12

If you have any questions regarding the above data, please contact me.

Sincerely yours,

RICHARD P. STANOVICK  
Director  
Chemistry Department

RPS:phb  
HLA Notebook No. 95, p. 7

RT 104064



# HAZLETON

LABORATORIES AMERICA, INC.

9200 LEESBURG TURNPIKE, VIENNA, VIRGINIA 22180, U S A

January 3, 1978

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Dear Mr. Stoltz:

The following analytical results were obtained from the three (3) water samples which you recently submitted for PCB analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>
12-15-77			
Upstream	<.05	<.05	<.05
Downstream	<.05	<.05	<.05
Outfall	<.05	<.05	<.05

If you have any questions regarding the above data, please contact me.

Sincerely yours,

RICHARD P. STANOVICK  
Director  
Chemistry Department

RPS:phb  
HLA Notebook No. 95, p. 6

RT 104065

Richard Stanovick

July 8th

RECEIVED JUL 11 1975

Mr. Stoltz -

In accordance with our telephone conversation today, I have attached a copy of the results we obtained from samples 20, 21, and 22.

If you have any further questions, please contact Mr. Stanovick.

Bev Crow

RT 104066



# HAZLETON LABORATORIES AMERICA, INC.

® 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vina)

Phone: (703) 893-5400

Cable: Hazlabs Wash D.C.

June 10, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Dear Mr. Stoltz:

The following analytical results were obtained from three samples which we received from your Company for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
20	<.1	<.01	<.1	.11
21	8.0	<.01	8.0	2.50
22	1.0	<.01	1.0	.01

If there are any questions concerning the above data, please do not hesitate to contact me.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104067



HAZLETON LABORATORIES AMERICA, INC.

® 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex. 899436 (Hazlabs Vina)

Phone: (703) 893-5400

Cable: Hazlabs Wash.D.C.

RECEIVED JUN 23 1975

June 19, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Dear Mr. Stoltz:

The following analytical results were obtained from three samples which you submitted for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
23	<.1	<.1	<.1	0.13
24	4.0	<.1	4.0	1.40
25	0.5	<.1	0.5	<.01

If you should have any questions regarding the above,  
please let me know.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104068

P.O. Box 187  
Otsego, Michigan 49078

Telephone: 616-692-6211

## Mead Paperboard Products

June 4, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing two samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked 20, 21, and 22.

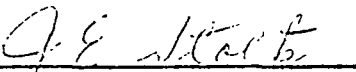
I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/Liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104069

P O Box 187  
Otsego, Michigan 49078

Telephone 616-692-6211

## Mead Paperboard Products

May 15, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing two samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked 18 and 19.

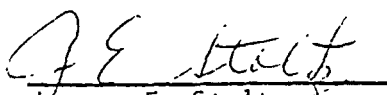
I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/Liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104070

OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, CORRESPONDENCE, SHIPPING PAPERS, INCLUDING FREIGHT BILLS AND BILLS OF LADING, AND ALL PACKAGES.

INVOICE IN TRIPLICATE. IT IS IMPORTANT THAT INVOICES BE MAILED WITHIN THREE DAYS AFTER SHIPMENT.

SHIP MOST ECONOMICAL WAY UNLESS OTHERWISE INDICATED

DATE 5/16/75

TO • Hazleton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

DELIVER TO

GATE #1 GATE #2 GATE #3 GATE #4 OFFICE  
☐ ☐ ☐ ☐ ☐

DATE WANTED	SHIP VIA	FOB.	TERMS	SUBJECT TO	SALES OR USE TAX	YES	NO
1	UPS	0500	1-10-75				

QUANTITY	DESCRIPTION	UNIT PRICE
2	Phenol Determinations Test method 222-C, "Standard Methods"	
2	PCB Determinations	
	On three process water samples submitted 5/9/75 via UPS	
	Show P.O. No. on invoice and report	
	Letter Attached.	
	J. E. Stoltz	
	RT 104071	

C. R. Cushman

P O Box 187  
Otsego, Michigan 49078

Telephone 616-692-6211

## Mead Paperboard Products

March 11, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing three samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked 7, 8, and 9.


I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/Liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104072



# HAZLETON LABORATORIES AMERICA, INC.

® 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vina)

Phone: (703) 893-5400

Cable: Hazlabs Wash.D.C.

RECEIVED MAR 20 1975

March 17, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Re: P.O. 18286

Dear Mr. Stoltz:

The following analytical results were obtained from three samples which you submitted for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
7	.28	<.01	.28	.24
8	1.04	<.01	1.04	1.40
9	<.01	<.01	<.01	.00

If you should have any questions regarding the above results, please do not hesitate to call me.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104073

# Mead Paperboard Products

P.O. Box 187  
Otsego, Michigan 49078

Telephone: 616-692-6211

May 8, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir:

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing two samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enoguh for these tests. Samples are marked 16 and 17.

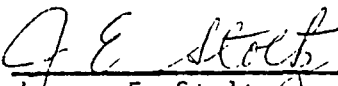
I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

RT 104074

JES/c

# Mead Paperboard Products

P.O. Box 187  
Otsego, Michigan 49078

Telephone: 616-692-6211

May 8, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

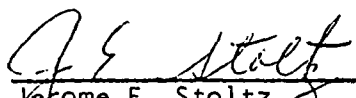
Dear Sir:

Under separate cover, I am forwarding to your attention, via U.P.S. a package containing three samples of process sludge on which I would like a P.C.B. analysis. These samples are marked: LAG-S, PIT-0, and PIT-F.

Our purchase order is enclosed. Your seven day report will be adequate.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104075

# mead purchase order

OTSEGO MILL • P.O. BOX 187 • OTSEGO, MICHIGAN 49078

PURCHASE ORDER NO

**18670**

OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, CORRESPONDENCE, SHIPPING PAPERS, INCLUDING FREIGHT BILLS AND BILLS OF LADING, AND ALL PACKAGES

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DATE **5/8/75**

TO • **Hazleton Laboratories, Inc.**  
**9200 Leesburg Turnpike**  
**Vienna, Virginia 22180**

DELIVER TO

GATE #1 ☐ GATE #2 ☐ GATE #3 ☐ GATE #4 ☐ OFFICE ☐

DATE WANTED	SHIP VIA	F.O.B.	TERMS	SUBJECT TO	SALES OR USE TAX	YES	NO
<i>SAP</i>	<i>1- W</i>	<i>Otsego</i>	<i>1- - - -</i>				<i>/</i>

QUANTITY	DESCRIPTION	UNIT PRICE
<b>2</b> <b>2</b>	<b>Phenol Determinations )</b> <b>P.C.B. Determinations )</b> <b>on samples marked #16 &amp; #17</b>	
<b>3</b>	<b>P.C.B. Determinations on samples marked</b> <b>LAG-S</b> <b>PIT-F</b> <b>PIT-O</b>	
<p>Show P. O. Number on invoice and report</p> <p><b>Letter Attached</b></p> <p><b>J. E. Stoltz</b></p> <p><b>RT 104076</b></p>		



REQUESTING DEPT. COPY



# HAZLETON LABORATORIES AMERICA, INC.

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Telex: 899436 (Hazlabs Vina)

Phone: (703) 893-5400

Cable: Hazlabs Wash.D.C.

RECEIVED 122 1 1975  
RECEIVED APR 2 1 1975

April 17, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P.O. Box 187  
Otsego, Michigan 49078

Re: P.O. 18460

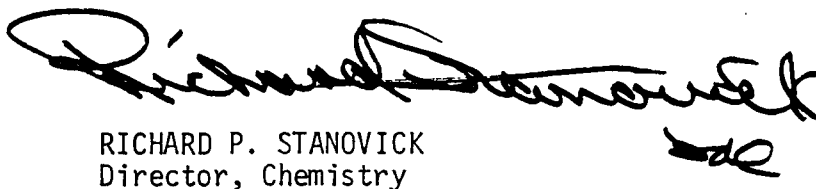
Dear Mr. Stoltz:

The following analytical results were obtained from three samples which you recently submitted for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
13	<.01	<.01	<.01	.18
14	1.80	<.01	1.80	.13
15	<.01	<.01	<.01	.00

If you should have any questions or comments concerning the above data, please do not hesitate to call me.

Sincerely,

  
RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104077

RECEIVED APR 14 1975



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Cable: Hazlabs Wash.D.C.

April 11, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Re: P.O. 18417

Dear Mr. Stoltz:

The following analytical results were obtained from three samples we received from your Company for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
10	.7	<.01	.7	.02
11	1.1	<.01	1.1	.14
12	<.01	<.01	<.01	.01

If there are any questions concerning the above data, please contact me.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104078

# Mead Paperboard Products

P.O. Box 187  
Otsego, Michigan 49078  
Telephone: 616-692-6211

April 9, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing three samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked 13, 14, and 15.

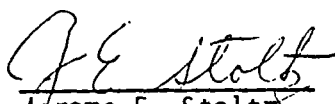
I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/Liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104079

OTSEGO MILL • P.O. BOX 187 • OTSEGO, MICHIGAN 49078

18460

DATE 4/10/75

DELIVER TO

GATE #1	GATE #2	GATE #3	GATE #4	OFFICE
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

RT 104080

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# Mead Paperboard Products

P.O. Box 187  
Otsego, Michigan 49078

Telephone: 616-692-6211

April 2, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing three samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked 10, 11, and 12.

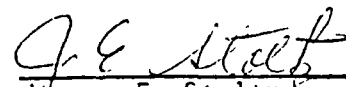
I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/Liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104081

OTSEGO MILL • P.O. BOX 187 • OTSEGO, MICHIGAN 49078

18417

SHIP MOST ECONOMICAL WAY UNLESS OTHERWISE INDICATED.

TO • Hazleton Laboratories, Inc.  
9200 Leesburg Turnpike  
• Vienna, Virginia 22180

OFFICE

☐

7

☐

□

□

DATE WANTED MAR 1968	SHIP VIA ✓	F.O.B. ✓	TERMS ✓	SUBJECT TO SALES OR USE TAX	YES	NO ✓
-------------------------	---------------	-------------	------------	--------------------------------	-----	---------

QUANTITY	DESCRIPTION	UNIT PRICE
3	Phenol Determinations Test Method 222-C, Standard Methods	
3	PCB Determinations  On three process water samples submitted 4/3/75 via U.P.S.  Show P.O. #on invoice and report  Letter attached.	
	J.E. Stoltz	
	RT 104082	

C. F. Cushman

REQUESTING DEPT. COPY

mc

P.O. Box 187  
Otsego, Michigan 49078

Telephone: 616-692-6211

## Mead Paperboard Products

March 6, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing three samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked 4, 5, and 6.

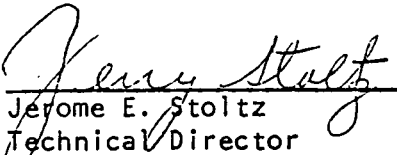
I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/Liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104083



OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, CORRESPONDENCE, SHIPPING PAPERS, INCLUDING FREIGHT BILLS AND BILLS OF LADING, AND ALL PACKAGES.

INVOICE IN TRIPPLICATE. IT IS IMPORTANT THAT INVOICES BE MAILED WITHIN THREE DAYS AFTER SHIPMENT.

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DATE 3/7/75

TO • Hazleton Laboratories  
9200 Leesburg Turnpike  
• Vienna, Virginia 22180

DELIVER TO

GATE #1 ☐ GATE #2 ☐ GATE #3 ☐ GATE #4 ☐ OFFICE ☐

DATE WANTED	SHIP VIA	F.O.B.	TERMS	SUBJECT TO	SALES OR USE TAX	YES	NO
QUANTITY	DESCRIPTION						UNIT PRICE
3	Phenol Determinations Test Method 222-C "Standard Methods"						
3	PCB Determinations						
	On three process water sample submitted 3/5/75 MXXX. UPS.						
	Show P.O. number on invoice & report						
	Letter attached						
	J. E. Stoltz						
	RT 104085						

*C R Cushman*



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RECEIVED MAR 17 1975

March 11, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Re: P.O. 18259

Dear Mr. Stoltz:

The following analytical results were obtained from three water samples we received from your Company for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
4		.20	.20	.120
5	1.08	.68	1.76	.925
6		.49	.49	.015

If there are any questions concerning the above data, please let me know.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104086

# Mead Paperboard Products

P O Box 187  
Otsego, Michigan 49078

Telephone 616-692-6211

December 19, 1974

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing three samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked "A", "B" and "C".

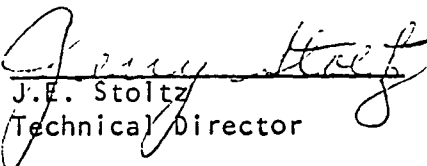
I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/Liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
J.E. Stoltz  
Technical Director

JES/c

RT 104101



# HAZLETON LABORATORIES AMERICA, INC.

® 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vine)

Phone: (703) 893-5400

Cable: Hazlabs Wash.D.C.

RECEIVED JAN 3 7 1975

December 31, 1974

17966

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Dear Mr. Stoltz:

The following analytical results were obtained from three samples which you recently submitted for analysis.

<u>Sample Identification</u>	<u>1242 ppb</u>	<u>1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
A	<.01	<.01	<.01	.08
B	1.50	7.40	8.90	.48
C	<.01	<.01	<.01	.01

If there are any questions or comments regarding the above data, please do not hesitate to contact me.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104102

OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, CORRESPONDENCE, SHIPPING PAPERS, INCLUDING FREIGHT BILLS AND BILLS OF LADING, AND ALL PACKAGES.

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DATE 12/19/74

TO • Hazelton Laboratories  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

DELIVER TO

GATE #1 GATE #2 GATE #3 GATE #4 OFFICE  
☐ ☐ ☐ ☐ ☐

DATE WANTED	SHIP VIA	F.O.B.	TERMS	SUBJECT TO	SALES OR USE TAX	YES	NO
	Free Del.		Net 10				
QUANTITY	DESCRIPTION						UNIT PRICE
3	Phenol Determinations test method 222-C "Standard Methods"						
3	P C R Determinations						
	On three process water samples submitted 12/20/74						
	Show P.O. # on billing invoice						
	Letter attached.						
	J.E.S.						
	RT 104103						



HAZLETON LABORATORIES AMERICA, INC.

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TELEPHONE  
(703) 893-5400

January 9, 1975

# INVOICE

004906

To:

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

RECEIVED JAN 13 1975

Project 515-130

Charges  
Thru Period  
Ending

699-402

P. O. No. 17906

Description	Charges This Period	Total
Analysis of three (3) water samples for PCB and phenol determinations		
Phenol Analyses at \$45 per sample	\$135.00	
PCB Analyses at \$25 per sample	<u>75.00</u>	
TOTAL	<u>\$210.00</u>	<u>\$210.00</u>

P.O. Box 187  
Otsego, Michigan 49078

Telephone: 616-692-6211

## Mead Paperboard Products

February 21, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing three samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked 1, 2, and 3. 7-4-7

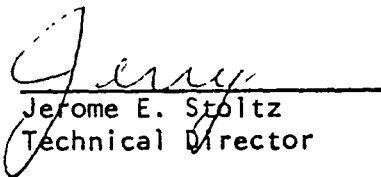
I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/Liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104105

# mead purchase order

OTSEGO MILL • P O BOX 187 • OTSEGO, MICHIGAN 49078

PURCHASE ORDER NO

18170

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DATE **2/21/75**

TO • **Hazleton Laboratories**  
**9200 Leesburg Turnpike**  
**Vienna, Virginia 22180**

DELIVER TO

GATE #1 GATE #2 GATE #3 GATE #4 OFFICE  
☐ ☐ ☐ ☐ ☐

DATE WANTED	SHIP VIA	FOB	TERMS	SUBJECT TO	SALES OR USE TAX	YES	NO
<b>SAP</b>							
QUANTITY	DESCRIPTION						UNIT PRICE
3	Phenol Determinations Test Method 222-C "Standard Methods"						
3	P C B Determinations						
	On three process water samples submitted on 2/18/75 by UPS						
	Samples Coded 1, 2, & 3						
	Show P.O. No. on billing invoice and report.						
	Letter attached.						
	Jerry Stoltz						
	RT 104106						

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**memo**

FROM

J. E. STOLTZ

12-19

PCB & PHENOL

1973 FEBRUARY 1973						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

1973 MARCH 1973						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

"A" Effluent From 001  
7<sup>00</sup> 12/18 - 7<sup>00</sup> 12/19

"B" Process Water  
Green Chest  
3 grabs 12/19 AM

"C" River Water  
8<sup>00</sup> 12/19  
1 grab

CYANAMID

RT 104107

June 6, 1974

To: Mr. R. Deem  
From: K. C. Ayers  
Re: PCB Levels Encountered in Municipal Effluents

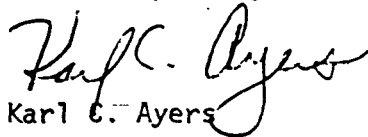
Attached is an article from the issue of WPCFJ just received.

Two points are important to the Otsego situation:

1. Values of PCB in treated municipal effluents have been documented to occur some places in the lower ppb range.
2. The study at Cedarburg showed removal efficiencies of 70% or more for PCB. (That municipal treatment plant consists of both primary and secondary facilities, e.g. TF)

You will want to confirm with N. I. Woods what differences exist between the testing procedure being used in the article and the procedure required by the State of Michigan.

Yours very truly,

  
Karl C. Ayers

KCA/mr

Att.

cc: Messrs. R. E. Kross    }  
      J. Stoltz            }  
      R. E. Trueb         } with attached article  
      Mrs. N. I. Woods    }

RT 104108

# Polychlorinated biphenyls in treatment plant effluents

DOUGLAS J. DUBE, GILMAN D. VEITH, AND G. FRED LEE

As METHODS of detection for chlorinated hydrocarbon pesticides have improved, polychlorinated biphenyls (PCB's), which are mixtures of chlorinated biphenyl compounds that have various percentages of chlorination, have been found in the environment. Interest in PCB's has increased because some of the physiological effects of the PCB isomers were thought to be similar to those of the chlorinated pesticides.

In Wisconsin, Veith<sup>1</sup> found PCB's in samples of the Milwaukee River near the city of Milwaukee. The concentrations of these PCB's (identified as Aroclor 1260) ranged from 0.02 to 0.25  $\mu\text{g/l}$ . The PCB's were also found in selected wastewater treatment plant effluents along the Milwaukee River at concentrations of equivalent Aroclor 1254 from 0.12 to 0.25  $\mu\text{g/l}$ .<sup>1</sup>

This study of wastewater treatment plant effluents was conducted in order to determine the degree of contamination in other wastewaters in southeastern Wisconsin.

## STUDY AREA

Samples were collected at municipal treatment plants in 11 southeastern Wisconsin cities (Figure 1). Factors used to select these cities were population (1,500 to 100,000), volume of waste flow [140,000 gal/day to 13 mgd (530 to 49,205 cu m/day)], type of treatment, number and types of industries present, and type of receiving water. The characteristics of each municipality investigated are presented in Table I.

## METHODS

**Sampling.** Glass containers were used throughout the study to minimize the possibility of sample contamination.

The samples were collected by immersing 2.5-l bottles in the waste stream at its entrance to the treatment plant, in the primary settling tank, in the trickling filter effluent, and in the final effluent of the treatment plant. The samples were conveyed to the State Laboratory of Hygiene, Madison, Wis., and extracted within 24 hr.

**Extraction.** The samples were batch extracted with redistilled hexane in separatory funnels. The samples were not filtered because they contained small amounts of solids. Hexane (100 ml) and the sample (800 ml) were placed in the funnel. After vigorous agitation for 1 min, the sample was passed to another funnel that also contained hexane (100 ml) and was again agitated for 1 min. The water portion was then discarded. This procedure was followed until 2,400 ml of the sample had been extracted. The extracts were combined and concentrated to 10 ml for cleanup.

**Cleanup.** The sample cleanup was done by means of liquid-solid chromatography of florasil.<sup>2-7</sup> The florasil column used was a 0.5-in. (1.27-cm) op glass column with a 200-ml vessel on the top. The column was fitted with a fritted glass and Teflon stopcock at the bottom. The column was filled with 0.5 in. (1.27 cm) of anhydrous sodium sulfate ( $\text{Na}_2\text{SO}_4$ ) and 19 g of florasil that had been activated at 105°C. The column was then covered with another 0.5 in. (1.27 cm) of anhydrous  $\text{Na}_2\text{SO}_4$  to prevent deactivation from water in the sample extract.<sup>4</sup> The columns were prewetted with hexane, and the extracts (10 ml) were placed on the column and eluted with hexane ether mixture (200 mg, 94.6 percent) at 3 to 5 ml/min.<sup>7</sup> This procedure was designed to remove fats, waxes, oils, and pigments from the eluate.

In or  
pesticid  
2 ml a  
column  
in a 9-  
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nary ic

\* Barl  
Coleman

Munc

Beaver I  
Beloit

Burlingt

Cedarbu  
Fort Atk  
Grafton

Lake Ge

Port Wa  
Portage

Racine

Walwort

\* TF =  
Note:

In order to separate the PCB's from other pesticides, the eluate was concentrated to 2 ml and passed through a second florisil column. This column consisted of florisil in a 9-mm ID glass column with 65 ml of hexane as the eluate.<sup>1</sup> The extracts were then concentrated to appropriate volumes for analysis of the samples on the gas-liquid chromatograph.

**Instrumentation.** Analyses of the cleaned extracts to determine the presence of PCB's were made by means of gas-liquid chromatography (GLC) with an electron-capture detector. Gas chromatographic analyses were conducted on a gas chromatograph\* equipped with a concentric tube, electron-capture detector (<sup>90</sup>Sr). The columns used were 6 ft by 0.25 in. (18.3 m by 0.635 cm) glass coils packed with OV-101/Qf-1 (2:2 percent) and OV-101/DC-200 (2:3 percent) coated on Gas Chrom Q (80/100 mesh). The carrier gas (purified nitrogen) was maintained at a flow rate of 28 ml/min; and the injector, column, and detector temperatures were 210°, 200°, and 270°C, respectively.

From the gas chromatograms, preliminary identification of the PCB's was made

\* Barber Coleman 5460 Pestalyzer, Barber-Coleman Co., Rockford, Ill.

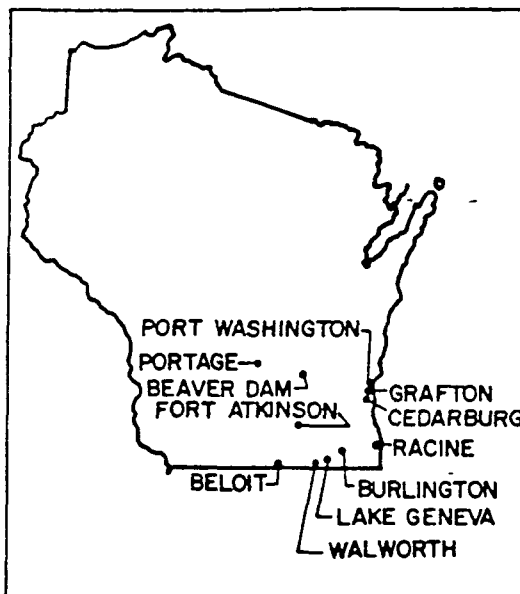


FIGURE 1.—Location of sampling sites in southeastern Wisconsin.

by comparing chromatograms of standard Aroclors with the chromatograms of the samples to determine which Aroclor the sample most resembled. The determination of the concentration present was made by measuring the height of the most prominent peaks in each of the Aroclor standards

TABLE I.—Characteristics of Municipalities Investigated in this Study

Municipality	Population	Dominant Types of Industries	Flow (mgd)	Type of Treatment*
Beaver Dam	15,000	Paint, glass, foundry, metal fabricators	0.25	TF, C
Beloit	35,000	Printing, tool and die, chemical formulators, heavy equipment	5	AS, C
Burlington	6,000	Cement, metal work, abrasives, paint, fiberglass, electrical equipment	1.5	AS, C
Cedarburg	5,000	Casting, plastics, tool and die, printing, paint	1	TF, C
Fort Atkinson	8,000	Tool and die, printing, electrical equipment, paint	1.3	AS, C
Grafton	4,000	Steel products, welding and cutting, casting, printing, plastics, electrical equipment	0.8	AS, C
Lake Geneva	5,000	Plastics, electric fixtures, rubber products, tool and die	0.7	TF, C
Port Washington	8,500	Foundries, chemicals, clothes manufacturing	1	Pr, C
Portage	8,000	Concrete products, plastics, hosiery, reproducing paper	0.7	TF, C
Racine	100,000	Die and molding, precision stamping, casting, foundry, printing, electrical products, chemical treatment and formulators	11	AS, C
Walworth	1,500	None	0.14	TF

\* TF = trickling filter; C = chlorination; D = digestors; AS = activated sludge; Pr = primary.

Note: Mgd  $\times$  3,785 = cu m/day.

TABLE II.—Reproducibility of PCB Analysis

Sample*	Volume Extracted (ml)	PCB Concentration† (µg/l)
Raw wastewater		
Sample 1	3,000	1.5
Sample 2	3,000	1.4
Sample 3	3,000	1.4
Final effluent		
Sample 1	2,500	0.9
Sample 2	2,400	1.1
Sample 3	2,400	1.0

\* All samples were taken at the Cedarburg, Wis., treatment plant on Oct. 6, 1971, at 11:30 hours

† The chromatograms of all samples collected most closely resembled the chromatogram of Aroclor 1254.

and comparing these to the height of the most prominent peaks in the samples. In this study, these peaks (PCB components numbers 4 and 7) lay on either side of the first doublet peak (isomer components numbers 5 and 6 in Figure 2). The difficulty of this method is apparent when a sample contains a mixture of two or more Aroclors and more detailed study is needed.

Recoveries of the samples used to test the precision of the Aroclor 1254 analyses are summarized in Table II. The analyses of the raw wastewater samples varied 7 percent from 1.4 µg/l, while analyses of the final effluent samples varied 10 percent from 1.0 µg/l.

Because of possible complications caused by the presence of more than one Aroclor and because of the possible interference of DDE, identification of some of the samples was confirmed using mass spectrometry. Confirmation was made on nine of the peaks from three of the samples.

The mass spectra were obtained at the Environmental Protection Agency's Southeast Water Laboratory in Athens, Ga. Analyses were made on a double focusing instrument † interfaced to a gas chromatograph ‡ with a separator.§ A constant accelerating voltage of 70 ev was used. The mass spectra were manually reduced.

† Hatachi Perkin Elmer RMU-7, Perkin-Elmer Corp., Norwalk, Conn.

‡ PE-900, Perkin-Elmer Corp., Norwalk, Conn.

§ Watson-Bieman.

## RESULTS AND DISCUSSION

The analysis of the mass spectra of three water extracts confirmed that the PCB mixtures present were the same as those indicated by the gas chromatograph. Because the judgments made from chromatograms were confirmed by mass spectrometry and because all samples were analyzed on the gas chromatograph under similar conditions, judgments made on the remaining samples were assumed to be qualitatively correct. However, the occurrence of materials other than PCB's in the rest of the samples is not precluded. The waste treatment plant at Beaver Dam was the only site where possible interference was noted. On the gas chromatograms from this site, PCB's could be detected, but the peaks on the graphs were obscured in such a way that the PCB concentrations present could not be determined.

The samples analyzed in this study indicate that Aroclor 1254 is the most common PCB in the wastewater effluents. Table III shows that PCB's were detected in all samples at concentrations that ranged from < 0.05 µg/l at Beaver Dam to 2.8 µg/l at Lake Geneva.¶ The mass transport (average pounds per day) of equivalent Aroclor 1254 ranged from less than  $0.2 \times 10^3$  to  $142 \times 10^3$  lb/day ( $0.9 \times 10^4$  to  $64.5 \times 10^3$  kg/day) at Beaver Dam and Racine, respectively.

Port Washington is not as highly industrialized as Grafton; however, the effluents from both cities contained approximately the same concentrations of PCB's. The concentrations ranged from 0.12 to 0.23 µg/l which, based on this study, is typical for cities with little or no industry.

Cedarburg is an industrialized municipality whose effluents contained concentrations of equivalent Aroclor 1254 of approximately 1.0 µg/l. Because the concentrations of PCB's for this city were high, the fluctuations in concentration throughout a 24-hr period were determined. The

¶ The determinable level for PCB's in water is approximately 0.05 µg/l with this method.

TABLE III.—PCB Concentrations in Wisconsin Treatment Plant Effluents

City	Sampling		PCB Concentrations* ( $\mu\text{g/l}$ )	Flow (mgd)	Estimated Mass Transport† (10 <sup>3</sup> -lb PCB/day)
	Date (1971)	Time			
Beaver Dam	1/20	6:30	<0.05	1.59	<0.2
	2/19	6:30	<0.05	4.33	—
	3/22	6:30	<0.05	3.50	—
	10/6	6:30	<0.05	2.34	—
Port Washington	1/20	8:30	0.14	0.70	—
	2/19	8:30	0.12	1.27	—
	3/22	8:30	0.22	1.46	2.7
	10/6	8:30	0.19	1.80	—
Grafton	1/9	9:30	0.12	0.84	0.8
	2/19	9:30	0.13	1.00	1.1
	3/22	9:30	0.23	0.78	1.5
	10/6	9:30	0.07	0.84	—
Cedarburg	1/20	10:30	0.48	1.05	4.2
	2/19	10:30	0.28	1.17	2.7
	3/22	10:30	0.97	2.57	—
	10/6	10:30	0.91	1.95	15
	10/6	10:30	1.1	1.95	18
	10/6	10:30	1.0	1.95	16
Racine	1/20	8:30	0.72	16.45	—
	2/19	12:00	0.60	25.06	—
	3/22	12:00	0.76	23.01	—
	10/6	12:00	0.83	20.51	142
Burlington	1/20	9:30	0.14	1.74	—
	2/19	13:00	0.09	2.61	—
	3/22	13:00	0.08	2.50	1.7
	10/6	13:00	0.12	1.35	—
Lake Geneva	1/20	10:30	2.5	0.56	—
	2/19	14:00	2.2	0.66	—
	3/22	14:00	2.8	0.78	18
	10/6	14:00	2.4	0.54	—
Walworth	1/19	11:00	0.17	—	—
	2/20	14:30	0.21	—	—
	3/22	14:30	0.34	—	—
	10/6	14:30	0.18	—	—
Beloit	1/19	12:30	0.11	3.89	—
	2/20	16:00	0.07	11.75	—
	3/22	16:00	0.06	7.56	3.8
	10/6	16:00	0.14	4.42	5.2
Fort Atkinson	1/19	2:00	0.15	1.24	—
	2/20	18:00	0.07	2.48	—
	3/22	18:00	0.10	1.85	1.5
	10/6	18:00	0.08	1.30	—
Portage	5/20	10:00	42	0.79	—
	9/20	10:00	38	1.00	—
	10/6	10:00	32	0.78	—

\* The chromatograms from all cities except for Portage most closely resembled the chromatogram of Aroclor 1254; the chromatogram from the Portage samples most closely resembled the chromatogram of Aroclor 1248.

† Mass transport estimates were made by dividing the number of pounds of PCB's discharged by the plant per day by the average flow of wastes into the plant per day.

Note: Mgd  $\times$  3,785 = cu m/day; lb  $\times$  0.454 = kg.

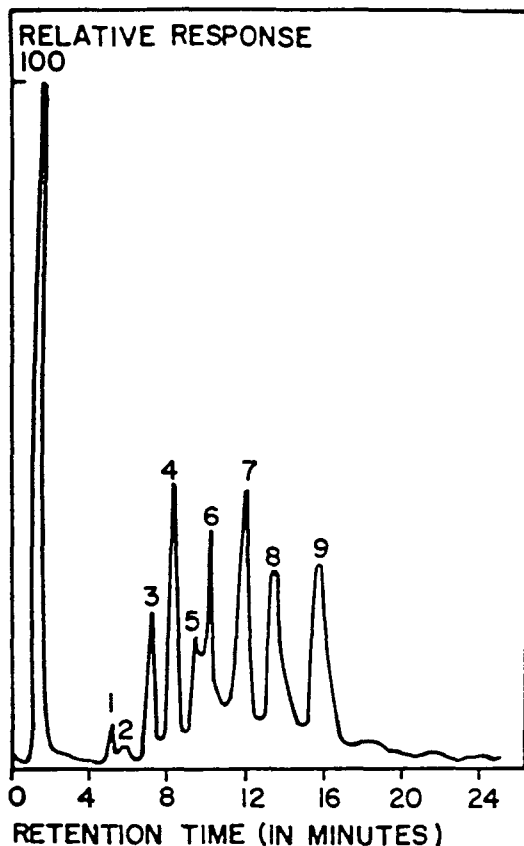


FIGURE 2.—Chromatogram of Aroclor 1254.

concentration of PCB's in raw wastewater began to increase at the beginning of the working day (8:00) from  $0.54 \mu\text{g/l}$  to a maximum of  $3.1 \mu\text{g/l}$  at 16:00 hours (Figure 3).

The concentration of PCB's in the final effluent seems to begin increasing from  $0.33 \mu\text{g/l}$  at 0:00 (midnight) to a maximum of  $0.77 \mu\text{g/l}$  at 14:00. The PCB concentration in both raw and final wastewaters increased and decreased simultaneously throughout the day.

The PCB concentration in the effluent is approximately 30 percent of that in the influent, and it is likely that the primary and secondary treatment plant was removing in excess of 70 percent of the PCB's.

The analysis of PCB's in the sludge presented in Table IV indicates that the sludges contain 1,000 times higher con-

centrations than does the water effluent of Cedarburg.

Racine is highly industrialized and has a high flow [11 mgd (41,635 cu m/day)] in its wastewater treatment plant. The PCB concentrations varied from  $0.60 \mu\text{g/l}$  on February 19 to  $0.83 \mu\text{g/l}$  on October 6. Because of the comparatively high flow, the mass transport of PCB's from the Racine plant is greater than  $0.1 \text{ lb/day}$  ( $0.05 \text{ kg/day}$ ) compared with approximately  $0.02 \text{ lb/day}$  ( $0.009 \text{ kg/day}$ ) from the Cedarburg treatment plant.

Plants in Burlington, Walworth, Beloit, and Fort Atkinson had concentrations

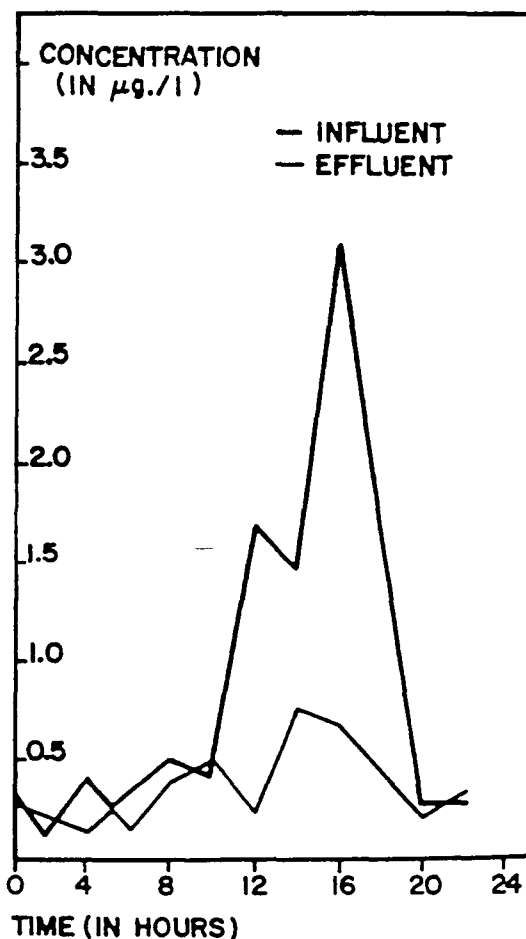


FIGURE 3.—Hourly concentrations of polychlorinated biphenyls in the influent and effluent from the Cedarburg, Wisconsin, treatment plant, April 15, 1971.

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above the determinable level but less than 0.40  $\mu\text{g/l}$ . The mass transport of PCB's from the treatment plants in these four cities was less than 0.01 lb/day (0.005 kg/day).

Lake Geneva is a highly industrialized city whose treatment plant effluents had PCB concentrations between 2.2 and 2.8  $\mu\text{g/l}$ . These high PCB concentrations suggested that the contamination is possibly from industrial wastes. The daily discharge of 0.02 lb/day (0.009 kg/day) was comparable to that for the Cedarburg plant.

Although industries in the city of Portage are few, they contributed between 32 and 42  $\mu\text{g/l}$  of equivalent Aroclor 1248 to the sanitary waste flow. A sample of the digester sludge was analyzed at 10:00 and found to contain 5.25 mg/l. It is of interest to note that the city of Portage has reported problems with the operation of their trickling filter, which may partially be the result of the presence of PCB's and other chemicals. With 32 to 42  $\mu\text{g/l}$  equivalent Aroclor 1248 in the waste, it could be toxic to some of the filter fauna. Organic mercury compounds were also found by mass spectrometry on the scum of the trickling filter at concentrations up to 90 mg/l.

Data presented in Figure 3 demonstrate that the time of sampling waste effluents is of major importance in mass transport estimate. For example, if the Cedarburg effluent was sampled at 14:00 on April 15, 1971, the estimated transport of PCB's out of the plant would be approximately twice that estimated from a sample taken at 8:00. It should be noted, however, that the PCB concentration in the effluent from the plant varied considerably less than that in the raw wastes entering the plant. Consequently, the mass transport may be considered as order-of-magnitude estimates.

The sources of the PCB's entering the treatment plants have not been identified in this study or in the literature. It is possible that PCB's could be released through the use of household products such as cleaning compounds and waxes. For example, Veith and Lee<sup>8</sup> found PCB's in

TABLE IV.—PCB Concentrations in the Cedarburg, Wisconsin, Treatment Plant\*

Sample	PCB Concentration†	
	At 10:00 (mg/l)	At 16:00 (mg/l)
Digester sludge	24	20
Primary settling sludge	69	31

\* Samples taken on April 15, 1971.

† The chromatograms of the samples most closely resembled the chromatogram of Aroclor 1254.

several detergents designed for electric dishwashers, aluminum foil, and packaging material. In addition to these possible household sources, PCB's may be released from leaking heat-exchanges, cutting oils, and lubricants. The Monsanto Company, formerly the sole producer of PCB's in the U. S., restricted the sales of PCB's to capacitors, transformers, and heat exchange systems in August 1970, although until April 1971 PCB's were still sold for industrial uses for which suitable replacement chemicals were not immediately available.

Further studies are needed to determine how effective these self-imposed restrictions by Monsanto will be in reducing the quantities of PCB's entering the environment.

#### SUMMARY AND CONCLUSIONS

The results of this study indicate that 6 of the 11 wastewater treatment plants in the study had effluent concentrations in the range of 0.1 to 0.5  $\mu\text{g/l}$  of a compound whose chromatogram appeared to match the chromatogram of Aroclor 1254. Two sites had effluent concentrations greater than 1.0  $\mu\text{g/l}$  of equivalent Aroclor 1254. One city had a maximum concentration of 42  $\mu\text{g/l}$  of equivalent Aroclor 1248 in the effluent waters and 5.2 mg/l of equivalent Aroclor 1248 in the digester sludge.

Data from the Cedarburg treatment plant show that the time of collection is important because the concentration can vary greatly. The data show that the minimum concentrations of PCB's in the Cedarburg plant are probably 0.13 to 0.30

$\mu\text{g/l}$  of equivalent Aroclor 1254, while maximum concentrations range from 1.5 to 3.1  $\mu\text{g/l}$ . Because of hourly fluctuations, it is difficult to determine precisely the total amount of PCB's being discharged into receiving waters without hourly sampling of the effluent at a given site.

Of the various samples of waste effluents collected, the estimated mass transport of PCB's varied from  $< 0.2 \times 10^3$  to  $142 \times 10^3$  lb/day ( $0.9 \times 10^4$  to  $64.5 \times 10^3$  kg/day). At Racine, an equivalent of 41.1 lb PCB/yr (18.7 kg/yr) flowed into the near shore waters of Lake Michigan.

Based on the study at the Cedarburg plant, it seems that the treatment of domestic waters removes 70 percent or more of the PCB's (Aroclor 1254) present in incoming wastes. The fact that most of the PCB's are removed by treatment is also evident in the comparatively high concentration of PCB's found in the digester and primary settling sludges.

#### ACKNOWLEDGMENTS

**Credits.** The authors wish to acknowledge the aid of Jackie Zoch for her assistance in the analyses, Joe Ball for his assistance in sample collection, and Wayne Garrison and his staff from the EPA Southeast Water Laboratory in Athens, Ga., for their help on mass spectral analyses.

This investigation was funded by the Wisconsin Department of Natural Resources and by the Department of Civil and Environmental Engineering, Uni-

versity of Wisconsin, Madison. Additional support was provided by the University of Texas, Dallas.

**Authors.** Douglas J. Dube is research chemist, Department of Natural Resources, Madison, Wis. Gilman D. Veith is scientist, EPA National Water Quality Laboratory, Duluth, Minn. G. Fred Lee is director, Institute Environmental Science, University of Texas, Dallas.

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mead, carter & mcdonald

April 26, 1974

P.O. Box 187  
Otsego, Michigan 49078

Telephone 616-692-6211

TO: C. W. Claypool

FROM: R. L. Trueb

SUBJECT: PCB Levels - Otsego Mill

Attached is Dick Deem's letter of April 19 to Karl Ayers. I believe this letter satisfies your earlier request to me. Jerry Stoltz's status report will be distributed the week of May 6.

RL Trueb

RLT/b

Attachment

cc: Jerry Stoltz

RT 104116

RECEIVED APR 25 1974

CONFIDENTIAL

April 23, 1974

To: Messrs. R. R. Deem  
R. E. Kross  
R. L. Trueb ✓

From: Mr. Karl C. Ayers


Re: Polychlorinated Bi-phenols

I am attaching certain background information on PCB's which should be considered as Dick Deem works with Otsego on PCB.

Dick Deem has already alerted us on the potential problems of testing and he is making sure that all necessary precautions are now being taken with new samples. He has the state test procedure and will cross-check it against the procedures used by the two labs receiving our samples.

As discussed with Dick Trueb, this morning, a telephone conference will be set up as soon as the latest test results have been received (probably around May 1). Definition of the problem must be completed before corrective action can be considered.

Yours very truly,

  
Karl C. Ayers

KCA/mr

Attachments

cc: Mr. S. C. Mason

RT 104117

Appleton, Wisconsin

DETERMINATION OF POLYCHLORINATED BIPHENYLS IN PAPERBOARD  
ROUND-ROBIN TESTING PROGRAM

## SUMMARY

The objective of this investigation was to document the present status of PCB testing on real contaminated paperboard samples. Twelve laboratories, representing industry, the Food and Drug Administration, and independent laboratories, performed four PCB determinations on each of four paperboard samples. Results of this round-robin investigation indicate that significant differences exist between results of PCB determinations on real paperboard samples tested in different laboratories. At the 5 parts per million PCB level, single determinations on the same board tested in different laboratories might differ by as much as 75%. Therefore, it must be concluded that the present PCB testing capability is not sufficiently precise to adequately monitor PCB's in paperboard at 5 parts per million.

Note: KCAyers has full copy of report  
if desired.

RT 104118

BARB:

HERE ARE CC OF STATE SURVEY  
REPORTS FOR 78, 80, 81, 82.

NOTE THAT WE DID NOT HAVE '79.  
THE NOS. I GAVE YOU WERE FROM  
REPORT IN 80 REPORT.

FOR THE LATEST YEARS, WE  
APPEAR TO BE MISSING '85 IN  
OUR FILE. PLEASE SEND A CC.  
WHEN YOU GET THE TIME.

J. Pan

RT 104132

PAST PCB DATA ON FILE

RT 104167



# HAZLETON LABORATORIES

a subsidiary of Environmental Sciences Corporation

July 28, 1972

Mr. C. Slade  
Paperboard Products Division  
The Mead Corporation  
3347 Madison Road  
Cincinnati, Ohio 45209

Dear Mr. Slade:

The following analytical results were obtained from the two water samples we recently received from your company (Purchase Order 13800).

<u>Sample Identification</u>	<u>PCB's</u> ppb
#1 Waste Water	0.63
#2 Intake Water	19.03

The water samples were extracted twice with equal volumes of petroleum ether. The extracts were combined, dried over sodium sulfate, taken to a suitable volume, and 2- to 5- $\mu$ l aliquots were injected for gas chromatographic analysis.

Thank you for the opportunity to be of service to you. If you have any questions or comments please call us.

Sincerely yours,

*S. I. Shahied*  
S. I. SHAHIED, Ph.D.  
Biochemistry

SIS:jb

RT 104168



## HAZLETON LABORATORIES

a subsidiary of Environmental Sciences Corporation

August 10, 1972

Mr. John Phillips  
The Mead Corporation  
Lynchburg Division  
Lynchburg, Virginia

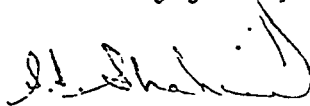
Dear Mr. Phillips:

The following analytical result was obtained for one sample analyzed at your request (Purchase Order Number 004273).

<u>Sample Identification</u>	<u>PCB's ppm</u>
Water	<0.50

A one-liter sample was extracted twice with equal volumes of petroleum ether. The extracts were combined, dried over sodium sulfate, taken to a suitable volume, and 2- to 5- $\mu$ l aliquots were injected for gas chromatographic analysis. Should you have any questions, or if we can assist you further please do not hesitate to call.

Sincerely yours,

  
S. I. SHAHIED, Ph.D.  
Biochemistry

SIS:aw

RT 104169



# HAZLETON LABORATORIES

a subsidiary of Environmental Sciences Corporation

August 10, 1972

Mead Paperboard Products  
Mac Sim Bar Mill  
P. O. Box 187  
Otsego, Michigan 49078

Gentlemen:

The following analytical results were obtained for two samples received from your mill (Purchase Order 11376).

<u>Sample Identification</u>	<u>PCB's</u> PPB
Influent	1.33
Effluent	<0.50

One-liter samples were extracted twice with equal volumes of petroleum ether. The extracts were combined, dried over sodium sulfate, taken to a suitable volume, and 2- to 5- $\mu$ l aliquots were injected for gas chromatographic analysis.

Should you have any questions, or if we can assist you further please let us know.

Sincerely yours,

*S. I. Shahied*  
S. I. SHAHIED, Ph.D.  
Biochemistry

SIS:aw

RT 104170

*Copy sent to Dick Lowe*

SEP 5 1972

**HAZLETON LABORATORIES***a subsidiary of Environmental Sciences Corporation*

August 30, 1972

Mead Paperboard Products  
Mac Sim Bar Mill  
P. O. Box 187  
Otsego, Michigan 49078

Gentlemen:

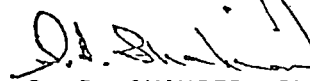
The following analytical results were obtained for two samples received from your mill (Purchase Order Number 11376). Please destroy our letter-report dated August 10, 1972, and replace with this one.

<u>Sample Identification</u>	<u>PCB's ppb</u>
Influent	1.33
Effluent	<0.50

One-liter samples were extracted twice with equal volumes of petroleum ether. The extracts were combined, dried over sodium sulfate, taken to a suitable volume, and 2- to 5- $\mu$ l aliquots were injected for gas chromatographic analysis.

Should you have any questions, or if we can assist you further please let us know.

Sincerely yours,

  
S. I. SHAHIED, Ph.D.  
Biochemistry

SIS:aw

RT 104171

**BRDA**

*file*  
BOXBOARD RESEARCH & DEVELOPMENT ASSOCIATION 350 S. BURDICK MALL • KALAMAZOO, MICH. 49006  
AREA CODE 616 344-0394

TO: Board of Trustees  
General Membership

SUBJECT: Newsletter

I. PCB

*Copy to:  
Paul Ayers  
Food Research  
Chillicothe*

Things have been happening rather rapidly in the area of PCB but hopefully we have reached a point where a report on this subject will not be completely out of date by the time this letter reaches you. FDA issued their final regulation on July 6 and it was to have taken effect September 6 and in this they set a limit of 10 ppm in paperboard to be used for food packaging.

During the 30 day period following the publication of the regulation objections were prepared by API and several companies and, as a result of these voluminous objections, FDA has stated that the portions of the regulations dealing with paperboard will be stayed or delayed until they have had an opportunity to study them in detail. It is my understanding that this will take the FDA two to three months. However, those portions of the regulation dealing with PCB levels in food will go into effect September 6.

On July 17 I was instructed by the trustees to (1) establish a working relationship with the compliance division of FDA, (2) institute a research and development program to determine the effect of semipermeable barriers on the transmission rates of PCB and (3) to investigate the degradation products of PCB and their toxilogical properties. It was felt that if we could show that the degradation products of the low molecular weight PCBs were nontoxic that this could affect FDA's attitude about the need for a regulation. Since the compliance procedure recognized the possible benefits of the semipermeable barriers (although this does not appear in the regulation) it would be most desirable to have information in this area.

Regarding the possible study of the degradation products of PCB, it appears that the quantity of these products that could be obtained would be so infinitesimally small that it would be impossible to conduct a study of their toxilogical properties. In addition, it is argued that the feeding studies with 1242, in effect, measure the toxilogical properties of the degradation products, so in reality there is no necessity for a separate study in this area.

RT 104172

In regard to a program to measure the effectiveness of semipermeable barriers, we have proposals from the IPC and Hazelton Laboratories and these will be studied by the appropriate committees in the near future. In addition, we wish to be sure that the program is designed so that the data generated will be acceptable to the FDA.

Probably the most significant developments have resulted from our contacts with the Compliance Section of FDA. This is the section of FDA which prepares detailed sampling and testing procedures called the Compliance Procedure, that will be used by inspectors in the field. An initial draft of this Compliance Procedure was made available to us at about the same time the regulation was issued. This describes such things as the lot to be tested, how it will be sampled, along with a mathematical explanation and justification of the procedures involved. One section of this compliance procedure states, in effect, that if a barrier in the package restricts the migration of PCB to the extent that the level of PCB in the food is below 0.2 ppm that no action will be taken regardless of the level in the paperboard. Hence our interest in semipermeable barriers.

According to the Compliance Procedure, 24 samples will be taken from the lot in question, a composite made, and tested for PCB. If the PCB level of the composite is 10 or under the lot is considered satisfactory. Obviously, if the lot tests at 10 some of the samples will be over 10 and some under and this is an item of considerable importance.

Essentially, the Compliance Division admits that a certain fraction of the board can be over 10 and that perfection is not expected. This is of prime importance in considering lot sizes to be sampled and tested as well as the development of quality control schemes that can guarantee compliance with an acceptable fraction defective.

In our recent conversations with FDA we suggested that if we could develop a sampling procedure in our mills that would be acceptable to them that this could be adopted as an industry standard. Companies that conformed to this would then be able to issue a Certificate of Test certifying that they had complied with FDA's recommended procedures. This concept was extremely acceptable to FDA, they call it "Cooperative Quality Assurance" (CQA) and were most interested in developing a program of this nature.

We then held a meeting of our Chemical and Coating Committee, reviewed our contacts with the FDA and explained the concept of CQA at that time. Subsequent to the meeting, fifteen members have reported that they endorse the concept in principle and would like to see it developed.

A CQA program would take the form of an agreement between BRDA and participating companies in which the companies who wish to be involved would (1) carry out a standardized sampling and testing program, (2)

report the results of their test to BRDA, (3) agree to a monitoring by BRDA. In return the company would be able to advise their customers that they are taking part in this CQA and issue a Certificate of Test.

BRDA would assemble the reported information and make periodic reports to the FDA in addition to carrying out spot checks within the participating companies. BRDA would also enter into an agreement with FDA involving the exchange of test data and other pertinent information.

A most essential part of the entire affair would be the sampling procedure and FDA has agreed that an 8 hour composite would be the basic lot that we would use for our purposes. Appropriate variations of this may be made for special circumstances.

We were asked by FDA to prepare a sampling procedure which would guarantee a AOQL (fraction defective) of no more than 5%. According to advice from our statisticians this can be achieved with a greatly reduced sampling program in comparison to what most mills are doing at the present time.

It should be made very clear that a Quality Assurance Program is not equivalent to a 100% guarantee. Although representatives of FDA state they would be quite satisfied with a 5% fraction defective they also state that if in the course of testing and surveillance they should happen to find a portion of this 5% they would have to take whatever steps they felt were appropriate. At the same time they also state that if industry is carrying out a CQA program there would be essentially no incentive on their part to test packaging material for its PCB level. According to information from the Grocery Manufacturers Association, this is indeed the case.

If the present objections to the regulation result in it being set aside permanently, possibly a modification of this CQA program would be desirable in order to maintain or improve relations with customers of food packaging paperboard.

## II. BRDA-St. Anne's Former

Experiments with our installation at WMU have been quite successful to the extent that Brown Company has ordered a unit to put on the back liner position of their 120" machine. According to our tests, the capabilities of this unit appear to be equivalent to or better than a Hydraformer, Manchester Former or an Ultra Former. A very good quality of formation has been obtained over a wide range of speeds and weights. The equipment can be made for less than \$10,000 a unit and the estimated installation cost is \$5,000.

Patents by St. Anne's cover the original concept and there is a royalty fee to St. Anne's of \$1,500 per unit. The modifications and developments of this design to make it applicable to a conventional cylinder belong to BRDA and their members. Drawings of the equipment are being prepared so that a member could have a unit made at a local machine shop.

Of course the proof of this development will lie in the results with the commercial installation at Brown Company and such questions as plybonding will only be answered after installations of multiple units have been made.

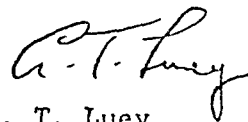
### III. Coating Weight Measurement Instrument

The prototype instrument which has been operated at CC of A's plant at Wapash has been considered a successful development and the program has been completed. Equipment for this purpose can be purchased from Drexelbrook Engineering Company and a simple unit will cost about \$9,000. A double unit with all kinds of accessories will cost approximately \$17,000. A first year service contract covering the cost of installation and education of personnel is approximately \$2,000 and is reduced 50% for succeeding years.

### IV. Operations Committee

A newly formed ad hoc Operations Committee has been making a detailed study of the programs and organization of BRDA for the Board of Trustees. Fundamentally, their charge is to assess the present and future problems that the recycled paperboard industry will face and determine if our present organization and method of operation can be expected to generate appropriate solutions to these problems. I believe this is another indication of the importance the trustees place upon the successful operation of BRDA and it is a healthy sign to have a reappraisal of our organization after twenty years.

Very sincerely yours,



A. T. Luey  
Manager

ATL:sh

RT 104175

FEB 2, 1976

83

POLYCHLORINATED BIPHENYLS (PCB)For your info. <sup>1</sup>/<sub>3</sub> FPH

From water quality

Polychlorinated biphenyls (PCB) consist of a mixture of compounds only slightly soluble in water; highly soluble in fats, oils, and nonpolar liquids; and highly resistant to both heat and biological degradation. PCB have a wide variety of industrial uses, primarily as insulating fluid in electrical and heat transfer equipment (Interdepartmental Task Force 1972).

Exposure to PCB is known to cause skin lesions (Schwartz and Peck (1943) and to increase liver enzyme activity that may have a secondary effect on reproductive processes (Risebrough et al. 1968, Street et al. 1969, Wassermann et al. 1970). It is not clear at this time whether the effects are due to PCB or its contaminants, the chlorinated dibenzofurans that are highly toxic (Bauer et al. 1961, Schulz 1968, Verrett 1970). It is also not known whether the chlorinated dibenzofurans are produced by degradation of PCB as well as during its manufacture.

The occurrence of PCB in our waters has been documented repeatedly (New Scientist 1966, Holmes et al. 1967, Risebrough et al. 1968, Jensen et al. 1969, Koeman et al. 1969, Schmidt et al. 1971, Veith and Lee 1971). They have been associated with sewage effluents (Holden 1970, Schmidt et al. 1971) and rainwater (Tarrant and Tatton 1968), as well as releases and leakage. Failures of closed systems using PCB have caused some of the more well known releases (Kuratsune et al. 1969, Duke et al. 1970). It has been reported that the defined treatment process does little or nothing to remove PCB (Ahling and Jensen 1970).

An epidemiological study on severe poisoning by rice oil contaminated with polychlorinated biphenyls in 1968 indicated that about 0.5 grams ingested over a period of approximately one month was sufficient to cause the Yusho disease. Many of those affected showed no signs of relief after about three years (Kuratsune et al. 1969).<sup>317</sup> Price and Welch (1971)<sup>316</sup> have estimated on the basis of 194 samples that 41-45 per cent of the general population of the U.S. may have PCB levels of 1.0 mg/kg or higher (wet weight) in adipose tissue. Therefore, it appears that PCB may accumulate in the body. On this basis it can be calculated that a daily intake of 0.02 mg would require about 70 years to be toxic. Applying a factor of safety of 10 would permit a daily intake of 0.002 mg, and assuming a two liter per day intake, suggests a permissible concentration in water to be 0.001 mg/l.

However, evaluation of the retention and accumulation of PCB from water instead of oil in humans is highly desirable. A study on rats with a single oral dose of 170 mg/kg showed urinary excretion (of PCB) to be limited while 70 per cent of the dose was found in the feces during an eight week period (Yoshimura et al. 1971).<sup>315</sup> Information on PCB in the diet would also be helpful.

Recommendation

Because too little is known about the levels in waters, the retention and accumulation in humans, and the effects of very low rates of ingestion, no defensible recommendation can be made at this time.

## POLYCHLORINATED BIPHENYLS (PCB)

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POLYCHLORINATED-BIPHENYLS (PCB) (Continued)

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RT 104180

PANEL ON PUBLIC  
WATER SUPPLIES

ICE

*Paul -  
Please submit  
these samples,  
Shanks,  
B*

**Mead**

Corporate Human and  
Environmental Protection

World Headquarters  
Courthouse Plaza Northeast  
Dayton, Ohio 45463

Telephone 513-222-6323

October 4, 1985

TO: G. R. Lewis  
Paperboard Products

FROM: L. R. McDonnold

CC: V. M. Devero  
J. A. Dickerson  
B. S. Cichon  
J. L. Fair

RE: Update of PCB Test Data - Paperboard Products

A review of our PCB records indicates it has been more than a year since we last tested sample board from our Cincinnati, Lynchburg and Otsego mills. In order to be in a position to rapidly respond to any customer inquiry on PCB in our products, I feel we should update our test data.

The Cincinnati product that most likely would be subject to such an inquiry might be tube stock for Reynold's Wrap.

At Otsego, the greatest potential for PCB contamination seems to be in Posted Oak which was the highest percent of mixed paper as recycled fiber. Printing inks and old carbonless papers might be sources of PCB.

At Lynchburg, we have in the past tested salt cap stock and its various components. This included several samples of kraft liner and white liners from different suppliers. If we can get those suppliers to provide PCB data without charge to Mead, we would save laboratory fees for your division. We would then only require samples of the cylinder board and the finished composite product.

In each case where a sample is to be submitted for test, the lab should have three to five sheets of 8-1/2 x 11" board or liner for analysis. Each sample should be fully identified (e.g. date of production, description, lot number, supplier, producing mill, etc.).

The samples should be sent to my attention at the Mead World Headquarters building. We have twice daily delivery to the Tech Center on Newmark Drive from WHQ.

By copy of this letter, I am requesting appropriate samples from the above three mills. If you have questions, please call.

*L. R. McDonnold*

RT 104181

LRM1004a/dmm

PCB

# Mead Paperboard Products

August 29, 1985

431 Helen Avenue  
Otsego, Michigan 49078

Telephone. 616-692-6211

Linda Koivuniemi  
Water Quality Specialist  
Michigan DNR - Plainwell Office  
P.O. Box 355  
Plainwell, MI 49080

Dear Linda:

This letter is in response to a phone conversation with Garth Aslakson on May 10, 1985 reporting a by-pass to the Kalamazoo River lasting approximately 1 hour. The by-pass occurred because of the failure of a motor driving an auxiliary pump which normally handles excessive flows at a disc filter. The motor failure allowed clarified effluent to overflow into a river gate and into the Kalamazoo River. This river gate has been referenced in previous correspondence. On August 17, 1985 the river gate was sealed with concrete preventing the possibility of by-pass at this point in the future.

By-pass was estimated at:

25,000 gallons  
132 ppm solids or 28 lbs.  
750 ppm BOD or 156 lbs.

These values added to our daily effluent of 001 discharge total solids of 320 lbs. and BOD of 558 lbs. which is within permitted daily discharges.

For any further information please feel free to contact me at 692-6211.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Michael L. Knapp

cc: W. Lapp

MLK/law

RT 104182

# Mead Paperboard Products

P.O. Box 187  
Otsego Michigan 49078  
Telephone 616-692-6211

April 25, 1985

Garth Aslakson  
Water Quality Specialist  
Surface Water Quality Division  
Michigan Dept. of Natural Resources  
District 12 Headquarters  
P.O. Box 355  
Plainwell, MI 49080

Dear Mr. Aslakson,

I wish to thank you for the time and effort put into 1985 Survey, of our location, your thoroughness is greatly appreciated.


In response to the concerns listed in your letter (April 2, 1985), Mead - Otsego is in the process of addressing the issues pointed out. Item #1 Operator Certification - enclosed is a background of John Syers, who is our relief operator. I would appreciate any assistance and information on the certification process for Mr. Syers.

Item #2 - Cleanliness and Maintenance. The week of April 8, 1985, a two man crew was assigned to clean the ground around the disc filter and clarifiers. As summer help and extra people are made available the remaining concerns of Item #2 will be addressed.

Item #3 - By-Pass. In a discussion with our Mill Manager, Mr. Les White, an inspection of the by-pass pipe was in question, the decision was made to seal off the river gate at outfall .002. This will be done when river conditions (level) allow the setting of forms and pouring of cement. A follow up letter will be sent as soon as this project is complete.

Hopefully we are addressing your concerns. Please contact me or my staff for any additional information desired.

Sincerely,



Michael L. Knapp  
Supt. of Maintenance and Utilities

skc

RT 104183

# Mead Paperboard Products

P.O. Box 187  
Otsego Michigan 49078

Telephone 616-692-6211

February 4, 1975

TO: K. C. Ayers

FROM: J. E. Stoltz

SUBJECT: PCB Data - Otsego Mill

Shown below are the PCB and Phenol data that was obtained from tests done by Hazelton Labs on the bi-monthly samples which we submitted since May of 1974.

PCB - ppb  
Phenol - mg/L

Month	Dutfall 001		Process Water		River Water	
	PCB	Phenol	PCB	Phenol	PCB	Phenol
May	< .10	.029	< .10	1.45	< .1*	.008*
June	< .10	.047	6.20	0.30	< .1	.019*
	< .10	.054	8.89	0.17	Broken	
July	< .10	.014	3.10	0.30	No Sample	

Samples were submitted but were not received

Aug.	0.41	.027	4.52	1.05	No Sample	
	< .10	.063	2.70	0.35	"	"
Sept.	Samples arrived in broken condition				"	"
	0.80	.022	1.90	.59	"	"
Oct.	0.73	.033	1.68	2.19	< .10	.03

Samples returned - broken

Nov.	0.90	.038	3.70	0.24	0.95	.008
	0.10	.028	0.32	.14	< .10	.00
Dec.	< .10	.00	Broken		< .10	.01

Samples submitted - No report was received

\*These samples were blanks composed of distilled water and coffee.

RT 104087

MEAD PAPERBOARD PRODUCTS

Page 2 -

To: K. C. Ayers

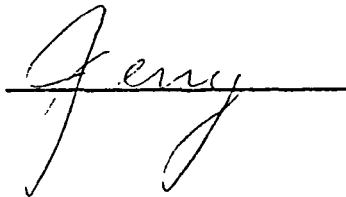
Subject: PCB Data - Otsego Mill

Three things are fairly obvious from the above data: 1. The PCB level in our effluent varies from good to bad and is certainly unpredictable; 2. The PCB level in our process water is many times higher than in the effluent which leads one to suspect that we are removing some of the PCB's, possibly in our clarifier sludge; & 3. that we are having problems with the samples arriving at Hazelton in good condition. I am fairly certain that the sample breakage problem is now under control.

We are also experiencing a problem with the service from Hazelton, in that it is slowing down. Lately, their reports have been so late in arriving that we don't have the necessary information in time for the monthly State reports. I am making notations on our State reports everytime that there is a problem with a sample or a report. We have our purchase orders and UPS records to verify that the samples were submitted in case the D.N.R. should question the lack of date on our monthly reports.

Our time limit of one year for checking levels of PCB's and Phenols in our effluent is rapidly drawing to a close. We should be hearing from the State in a month or two whether or not PCB and Phenol limitations will become part of our N.P.D.E.S. permit.

If you should have any questions concerning the above information, please let me know.

A handwritten signature in cursive script, appearing to read "Jerry", is written over a horizontal line.

cc: R.L. Trueb  
R. Kross  
R. Lowe  
R.R. Deem

RT 104088

# Mead Paperboard Products

P O Box 187  
Otsego Michigan 49078

Telephone 616-692-6211

February 4, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

P.O. # 18100

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing three samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked "A", "B", and "C".

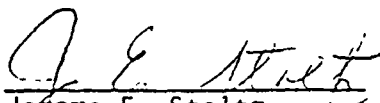
I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/Liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104089



# HAZLETON LABORATORIES AMERICA, INC.

© 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vina)

Phone: (703) 893-5400

Cable: Hazlabs Wash D C.

RECEIVED FEB 17 1975

February 11, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Re: PO 18100

Dear Mr. Stoltz:

The following analytical results were obtained from two water samples which you recently submitted for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
A	.23	<.01	.23	.06
B	3.40	<.01	3.40	.10

Sample "C" arrived this date and the results we obtain will be forwarded to you as soon as possible.

If there are any questions concerning the above, please do not hesitate to contact me.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104090

RECEIVED MAR 5 1975



HAZLETON LABORATORIES AMERICA, INC.

® 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vna)

Phone: (703) 893-5400

Cable Hazlabs Wash D C

February 27, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Re: P.O. 18170

Dear Mr. Stoltz:

The following analytical results were obtained from three (3) water samples which you submitted for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
1	<.01	<.1*	<.1	.09
2	1.95	<.01	1.95	.21
3	.55	<.01	.55	.00

\* Sample #1 has too much interference of unknown material to detect 1254 at less than <.1 ppb. This is not uncommon in water samples.

If you should have any questions regarding the above data, please do not hesitate to call me.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104091



# HAZLETON LABORATORIES AMERICA, INC.

® 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vina)

Phone: (703) 893-5400

Cable: Hazlabs Wash.D.C.

February 13, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Re: P.O. 18100

Dear Mr. Stoltz:

The following analytical results were obtained from one water sample we received from your Company for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
C	<.01	<.01	<.01	.00

If you have any questions regarding the above data,  
please let me know.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104092

P O Box 187  
Otsego, Michigan 49078

Telephone 616-692-6211

January 31, 1975

## Mead Paperboard Products

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing three samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked "A", "B", and "C".

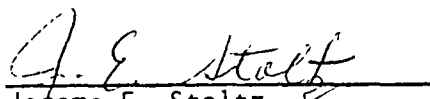
I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104093



# HAZLETON LABORATORIES AMERICA, INC.

® 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vina)

Phone: (703) 893-5400

Cable: Hazlabs Wash. D.C.

RECEIVED FEB 17 1975

February 11, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Re: P.O. 18079

Dear Mr. Stoltz:

The following analytical results were obtained from three water samples we received from your Company for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
A	.13	<.01	.13	.02
B	1.00	<.01	1.00	.07
C	.06	<.01	.06	.00

If you have any questions regarding the above data, please let me know.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104094

# Purchase Requisition

ORDER No. \_\_\_\_\_

REQ. DATE 1-31-75

DATE WANTED \_\_\_\_\_

DATE 1-31-75

SUPPLIER

Hagleton Laboratories  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

MATERIAL TO BE USED FOR

QUANTITY

DESCRIPTION

PRICE

3 Phenol Determinations  
 Test method 222-C, Standard  
 Methods

3 PCB Determinations

On three process water  
 samples submitted 1-31-75  
 by U.P.S.

Show P.O. No. on billing  
 invoice & report.

Letter attached

RT 104095

Requisitioner

JES

Originator

OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, CORRESPONDENCE, SHIPPING PAPERS, INCLUDING FREIGHT BILLS AND BILLS OF LADING AND ALL PACKAGES  
 INVOICE IN TRIPPLICATE IT IS IMPORTANT THAT INVOICES BE MAILED WITHIN THREE DAYS AFTER SHIPMENT  
 SHIP MOST ECONOMICAL WAY UNLESS OTHERWISE INDICATED

DATE **1/31/75**

TO • **Hazleton Laboratories**  
 • **9200 Leesburg Turnpike**  
 • **Vienna, Virginia 22180**

DELIVER TO				
GATE #1	GATE #2	GATE #3	GATE #4	OFFICE
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

DATE WANTED	SHIP VIA	FOB	TERMS	SUBJECT TO	SALES OR USE TAX	YES	NO
ASAP	UPS	OT-01	1-1-75				
QUANTITY	DESCRIPTION						UNIT PRICE
3	Phenal Determinations Test Method 222-C - Standard Methods.						
3	P C B Determinations						
	On three process water samples submitted 1/31/75 by UPS.						
	Show P.O. No. on billing invoice and report.						
	See latter attached.						
	Jerry Stoltz						
	RT 104096						

*C. R. Cushman*

# Mead Paperboard Products

P O Box 187  
Otsego, Michigan 49078

Telephone 616-692-6211

January 17, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing three samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked "A", "B", and "C".

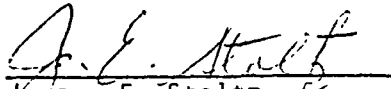
I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104097



# HAZLETON LABORATORIES AMERICA, INC.

9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vina)

Phone: (703) 893-5400

Cable: Hazlabs Wash D C.

January 28, 1975

~~1/28/75~~

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Dear Mr. Stoltz:

The following analytical results were obtained from two water samples we received from your Company for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
A	<.01	<.01	<.01	.00
C	<.01	<.01	<.01	.01

Sample B was Received Broken

If you should have any questions regarding the above data, please do not hesitate to contact me.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104098

# mead purchase order

OTSEGO MILL • P.O. BOX 187 • OTSEGO, MICHIGAN 49078

PURCHASE ORDER NO

18013

OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES CORRESPONDENCE SHIPPING PAPERS INCLUDING FREIGHT BILLS AND BILLS OF LADING AND ALL PACKAGES  
INVOICE IN TRIPPLICATE IT IS IMPORTANT THAT INVOICES BE MAILED WITHIN THREE DAYS AFTER SHIPMENT  
SHIP MOST ECONOMICAL WAY UNLESS OTHERWISE INDICATED

DATE 1/17/75

TO • Hazleton Laboratories  
• 9200 Leesburg Turnpike  
• Vienna, Virginia 22180

DELIVER TO

GATE #1 GATE #2 GATE #3 GATE #4 OFFICE  
☐ ☐ ☐ ☐ ☐

DATE WANTED	SHIP VIA	FOB.	TERMS	SUBJECT TO	SALES OR USE TAX	YES	NO
ASAP			Usual				
QUANTITY	DESCRIPTION						UNIT PRICE
3	Phenol Determinations Test method 222-C Standard Methods						
3	P.C.D. Determinations						
	On three process water samples submitted 1/17/75 by UPS						
	Show P.O. No. on billing invoice						
	Letter attached.						
	Lab. J. Stoltz						
	RT 104099						

*C. R. [Signature]*

REQUESTING DEPT. COPY



HAZLETON LABORATORIES AMERICA, INC.

9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

January 30, 1975

TELEPHONE  
(703) 893-5400

005111

# INVOICE

To:

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P.O. Box 187  
Otsego, Michigan 49078

Project 699-402

515-131 P.O. NO: 18013

Charges  
Thru Period  
Ending

Description	Charges This Period	Total
Analysis of two (2) water samples for PCB's and phenol content		
Phenol Analyses at \$45 per Sample	\$ 90.00	
PCB Analyses at \$25 per Sample	50.00	
Total Amount Due:	\$ <u>140.00</u>	\$ <u>140.00</u>

Note: Sample "B" was Received Broken

OK for  
Payment  
JES  
2/1/75

*File*

# Mead Paperboard Products

P O Box 187  
Otsego Michigan 49078

Telephone 616-692-6211

February 4, 1975

TO: K. C. Ayers

FROM: J. E. Stoltz

SUBJECT: PCB Data - Otsego Mill

Shown below are the PCB and Phenol data that was obtained from tests done by Hazelton Labs on the bi-monthly samples which we submitted since May of 1974.

PCB - ppb  
Phenol - mg/L

Month	Outfall 001		Process Water		River Water	
	PCB	Phenol	PCB	Phenol	PCB	Phenol
May	< .10	.029	< .10	1.45	< .1*	.008*
June	< .10	.047	6.20	0.30	< .1	.019*
	< .10	.054	8.89	0.17	Broken	
July	< .10	.014	3.10	0.30	No Sample	
Samples were submitted but were not received						
Aug.	0.41	.027	4.52	1.05	No Sample	
	< .10	.063	2.70	0.35	"	"
Sept.	Samples arrived in broken condition				"	"
	0.80	.022	1.90	.59	"	"
Oct.	0.73	.033	1.68	2.19	< .10	.03
Samples returned - broken						
Nov.	0.90	.038	3.70	0.24	0.95	.008
	0.10	.028	0.32	.14	< .10	.00
Dec.	< .10	.00	Broken		< .10	.01

Samples submitted - No report was received

\*These samples were blanks composed of distilled water and coffee.

RT 104087

MEAD PAPERBOARD PRODUCTS

Page 2 -

To: K. C. Ayers

Subject: PCB Data - Otsego Mill

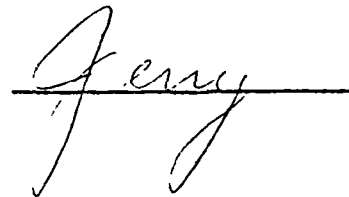
Three things are fairly obvious from the above data: 1. The PCB level in our effluent varies from good to bad and is certainly unpredictable; 2. The PCB level in our process water is many times higher than in the effluent which leads one to suspect that we are removing some of the PCB's, possibly in our clarifier sludge; & 3. that we are having problems with the samples arriving at Hazelton in good condition. I am fairly certain that the sample breakage problem is now under control.

We are also experiencing a problem with the service from Hazelton, in that it is slowing down. Lately, their reports have been so late in arriving that we don't have the necessary information in time for the monthly State reports. I am making notations on our State reports everytime that there is a problem with a sample or a report. We have our purchase orders and UPS records to verify that the samples were submitted in case the D.N.R. should question the lack of date on our monthly reports.

Our time limit of one year for checking levels of PCB's and Phenols in our effluent is rapidly drawing to a close. We should be hearing from the State in a month or two whether or not PCB and Phenol limitations will become part of our N.P.D.E.S. permit.

If you should have any questions concerning the above information, please let me know.

cc: R.L. Trueb  
R. Kross  
R. Lowe  
R.R. Deem

A handwritten signature in cursive script, appearing to read "Jerry", is written over a horizontal line.

RT 104088

# Mead Paperboard Products

P.O. Box 187  
Otsego, Michigan 49078

Telephone 616-692-6211

February 4, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

*P.O. # 18100*

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing three samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked "A", "B", and "C".


I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/Liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104089



# HAZLETON LABORATORIES AMERICA, INC.

® 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vins)

Phone: (703) 893-5400

Cable: Hazlabs Wash.D.C.

RECEIVED FEB 17 1975

February 11, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Re: PO 18100

Dear Mr. Stoltz:

The following analytical results were obtained from two water samples which you recently submitted for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
A	.23	<.01	.23	.06
B	3.40	<.01	3.40	.10

Sample "C" arrived this date and the results we obtain will be forwarded to you as soon as possible.

If there are any questions concerning the above, please do not hesitate to contact me.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104090

RECEIVED MAR 5 1975



HAZLETON LABORATORIES AMERICA, INC.

® 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vire)

Phone: (703) 893-5400

Cable Hazlabs Wash D C

February 27, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Re: P.O. 18170

Dear Mr. Stoltz:

The following analytical results were obtained from three (3) water samples which you submitted for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
1	<.01	<.1*	<.1	.09
2	1.95	<.01	1.95	.21
3	.55	<.01	.55	.00

\* Sample #1 has too much interference of unknown material to detect 1254 at less than <.1 ppb. This is not uncommon in water samples.

If you should have any questions regarding the above data, please do not hesitate to call me.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104091



# HAZLETON LABORATORIES AMERICA, INC.

® 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vire)

Phone: (703) 893-5400

Cable: Hazlabs Wash.D.C.

February 13, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Re: P.O. 18100

Dear Mr. Stoltz:

The following analytical results were obtained from one water sample we received from your Company for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
C	<.01	<.01	<.01	.00

If you have any questions regarding the above data,  
please let me know.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104092

P.O. Box 187  
Otsego, Michigan 49078

Telephone: 616-692-6211

January 31, 1975

## Mead Paperboard Products

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing three samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked "A", "B", and "C".

I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104093



# HAZLETON LABORATORIES AMERICA, INC.

® 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vina)

Phone: (703) 893-5400

Cable: Hazlabs Wash.D.C.

RECEIVED FEB 17 1975

February 11, 1975

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Re: P.O. 18079

Dear Mr. Stoltz:

The following analytical results were obtained from three water samples we received from your Company for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
A	.13	<.01	.13	.02
B	1.00	<.01	1.00	.07
C	.06	<.01	.06	.00

If you have any questions regarding the above data, please let me know.

Sincerely,

*Richard Stanovick*  
DAC

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104094

# Purchase Requisition

ORDER No. \_\_\_\_\_

REQ. DATE 1-31-75

DATE WANTED \_\_\_\_\_

DATE 1-31-75

SUPPLIER

Hazleton Laboratories  
9200 Leesburg Turnpike  
Winona, Virginia 22140

MATERIAL TO BE USED FOR \_\_\_\_\_

QUANTITY

DESCRIPTION

PRICE

3

Phenol Determinations  
Test method 222-c, Standard  
Methods

3

P.C.B. Determinations

On three process water  
samples submitted 1-31-75  
by U.P.S.

Show P.O. No. on billing  
invoice & report.

Letter attached

RT 104095

Requisitioner

JES

Originator

OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, CORRESPONDENCE, SHIPPING PAPERS, INCLUDING FREIGHT BILLS AND BILLS OF LADING, AND ALL PACKAGES.

INVOICE IN TRIPLICATE. IT IS IMPORTANT THAT INVOICES BE MAILED WITHIN THREE DAYS AFTER SHIPMENT.

SHIP MOST ECONOMICAL WAY UNLESS OTHERWISE INDICATED.

DATE 1/31/75

TO • Hazleton Laboratories  
• 9200 Leesburg Turnpike  
• Vienna, Virginia 22180

DELIVER TO

**GATE #1**

**GATE #2**

- GATE #3

**GATE #4**

OFFICE

☐

7

□

□

7

DATE WANTED <b>ASAP</b>	SHIP VIA <i>KPS</i>	F.O.B. <i>24-01</i>	TERMS <i>1-10</i>	SUBJECT TO SALES OR USE TAX      YES      NO
----------------------------	------------------------	------------------------	----------------------	---

SALES OR USE TAX

**YES**

NO

QUANTITY	DESCRIPTION	UNIT PRICE
----------	-------------	------------

3 Phenol Determinations Test Method 222-C - Standard Methods.

3	P C B Determinations
---	----------------------

On three process water samples submitted 1/31/75 by UPS.

Show P.O. No. on billing invoice and report.

See letter attached.

**Jerry Stoltz**

RT 104096

C. R. Cushman

REQUESTING DEPT. COPY

# Mead Paperboard Products

P.O. Box 187  
Otsego, Michigan 49078

Telephone: 616-692-6211

January 17, 1975

Mr. Richard P. Stanovick  
Hazelton Laboratories, Inc.  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

Dear Sir;

Under separate cover, I am forwarding to your attention, via United Parcel, a package containing three samples of our process waters on which I would like several analyses. The sample volumes should be sufficient enough for these tests. Samples are marked "A", "B", and "C".

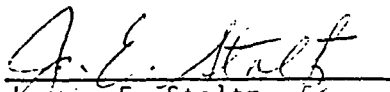
I would like the following tests performed on each sample:

- a) Phenol determination - run test in accordance to "Standard Methods for the Examination of Water and Wastewater", 13th Edition. Report results in mg/liter.
- b) PCB determination - by gas chromatography-electron capture detector. Report results in ppb.

Our purchase order is enclosed. Please fill in your charges and send the bill to my attention. Your seven day report will be adequate. Should any questions arise concerning the samples or the tests, please contact me.

Sincerely,

MEAD PAPERBOARD PRODUCTS  
OTSEGO MILL

  
Jerome E. Stoltz  
Technical Director

JES/c

RT 104097



# HAZLETON LABORATORIES AMERICA, INC.

® 9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

Telex: 899436 (Hazlabs Vina)

Phone: (703) 893-5400

Cable: Hazlabs Wash.D.C.

January 28, 1975

~~1-2-5-8~~

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P. O. Box 187  
Otsego, Michigan 49078

Dear Mr. Stoltz:

The following analytical results were obtained from two water samples we received from your Company for analysis.

<u>Sample Identification</u>	<u>PCB's 1242 ppb</u>	<u>PCB's 1254 ppb</u>	<u>Total PCB's ppb</u>	<u>Phenol Content mg/liter</u>
A	<.01	<.01	<.01	.00
C	<.01	<.01	<.01	.01

Sample B was Received Broken

If you should have any questions regarding the above data, please do not hesitate to contact me.

Sincerely,

RICHARD P. STANOVICK  
Director, Chemistry

RPS/bac

RT 104098

# mead purchase order

OTSEGO MILL • P O • BOX 187 • OTSEGO, MICHIGAN 49078

PURCHASE ORDER NO

18013

OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES CORRESPONDENCE SHIPPING PAPERS INCLUDING FREIGHT BILLS AND BILLS OF LADING AND ALL PACKAGES

INVOICE IN TRIPPLICATE IT IS IMPORTANT THAT INVOICES BE MAILED WITHIN THREE DAYS AFTER SHIPMENT

SHIP MOST ECONOMICAL WAY UNLESS OTHERWISE INDICATED

DATE 1/17/75

TO Hazleton Laboratories  
9200 Leesburg Turnpike  
Vienna, Virginia 22180

DELIVER TO

GATE #1 GATE #2 GATE #3 GATE #4 OFFICE  
☐ ☐ ☐ ☐ ☐

DATE WANTED <b>ASAP</b>	SHIP VIA	FOB	TERMS <b>Usual</b>	SUBJECT TO SALES OR USE TAX YES NO
----------------------------	----------	-----	-----------------------	---------------------------------------

QUANTITY	DESCRIPTION	UNIT PRICE
----------	-------------	------------

3	Phenol Determinations Test method 222-C Standard Methods	
---	---	--

3	P.C.B. Determinations	
---	-----------------------	--

On three process water samples submitted 1/17/75 by UPS

Show P.O. No. on billing invoice

Letter attached.

Lab.  
J. Stoltz

RT 104099

*C. R. Uschman*

REQUESTING DEPT. COPY



HAZLETON LABORATORIES AMERICA, INC.

9200 Leesburg Turnpike • Vienna, Virginia 22180 • U.S.A.

January 30, 1975

TELEPHONE  
(703) 893-5400

005111

# INVOICE

To:

Mr. J. E. Stoltz  
Technical Director  
Mead Paperboard Products  
P.O. Box 187  
Otsego, Michigan 49078

Project 699-402

515-131 P.O. NO: 18013

Charges  
Thru Period  
Ending

Description	Charges This Period	Total
Analysis of two (2) water samples for PCB's and phenol content		
Phenol Analyses at \$45 per Sample	\$ 90.00	
PCB Analyses at \$25 per Sample	50.00	
Total Amount Due:	\$ 140.00	\$ 140.00
Note: Sample "B" was Received Broken		
OK for Payment JES 2/1/75		

**ier One** EMERGENCY AND HAZARDOUS  
CHEMICAL INVENTORY  
Aggregate Information by Hazard Type

FOR  
OFFICIAL  
USE  
ONLY

ID #

Date Received

Important: Read instructions before completing form

**Facility Identification**

Name Waldorf Corporation  
Street Address 177 Angell St.  
City Battle Creek State MI Zip 49016  
SIC Code     Dun & Brad Number 07-256-8165

**Owner/Operator**

Name Waldorf Corporation  
Street Address 2250 Wabash Ave. St. Paul MN 55114  
Phone (612) 641-4938

Reporting Period From January 1 to December 31, 19\_\_\_\_

**Emergency Contacts**

Name Randy B. Yates  
Title Coordinator  
Phone (616) 963-5511 ext 254  
24 Hour Phone (616) 966-7066 pager

Name Mark Shapton  
Title Eng.  
Phone (616) 963-5511 ext 340  
24 Hour Phone ( )

Hazard Type	Max Amount*	Average Daily Amount*	Number of Days On-Site	General Location	<input type="checkbox"/> Check if site plan is attached
Fire	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		
Sudden Release of Pressure	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		
Reactivity	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<u>P C B conveyor room transformer, coating room transformer ground floor, powerhouse ground floor, pumping station ground floor</u>	

Immediate (acute)	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<u>P C B</u>
Delayed (Chronic)	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<u>P C B</u>

**Certification (Read and sign after completing all sections)**

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate and complete.

Name and official title of owner/operator OR owner/operator's authorized representative

* Reporting Ranges	Range Value	Weight Range in Pounds From... To...
	00	0 99
	01	100 999
	02	1000 9,999
	03	10,000 99,999
	04	100,000 999,999
	05	1,000,000 9,999,999
	06	10,000,000 49,999,999
	07	50,000,000 99,999,999
	NR	100 000 000 499 999 999

## SHEET NO.

OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER NO.
SUBJECT	61	CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.W.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	(
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
EATER ROOM DISCONNECTS	----	----	50-100	No	No	
SUBSTATION #3 (BOILING BSMT.)	8113529	750	380	No	No	
	8037219	200	115	No	No	

MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
JBSTATION #2	USED OIL		20-30	No	No	W.A.V.

## ENGINEERING CALCULATIONS

SHEET NO.

DATE Feb. 89

PLANT

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.U.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	}
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
BEATER ROOM DISCONNECTS	----	----	50-100	No	No	
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	
	8037219	200	115	No	No	
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	W.A.U.

## ENGINEERING CALCULATIONS

SHEET NO.

DATE

March, 1989

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

61

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	D.V.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	"
	8113530	1000	434	No	No	"
	8037218	300	209	No	No	"
	8113527	1000	434	No	No	"
HEATER ROOM DISCONNECTS	----	----	50-100	No	No	"
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	"
	8037219	200	115	No	No	"

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	D.V.

SHEET NO.

DATE April 89.

PLANT

OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER NO.
	61	
SUBJECT		CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	MJ
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	MJ
	8113530	1000	434	NO	NO	MJ
	8037218	300	209	NO	NO	MJ
	8113527	1000	434	NO	NO	MJ
HEATER ROOM DISCONNECTS	----	----	50-100	NO	NO	MJ
SUBSTATION #3 (LOADING BSMT.)	8113529	750	380	NO	NO	MJ
	8037219	200	115	NO	NO	MJ

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
UBSTATION #2	USED OIL		20-30	NO.	NO	MIKE JAMZ

## ENGINEERING CALCULATIONS

SHEET NO.

DATE

May 89

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

61

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.U.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	W.A.U.
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
EATER ROOM DISCONNECTS	----	----	50-100	No	No	
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	
	8037219	200	115	No	No	

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	W.A.U.

## ENGINEERING CALCULATIONS

SHEET NO.

DATE

June 89

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 POWER HOUSE)	8113528	750	380	? IN PAN	NO	WAW.
SUBSTATION #2 CONVEYOR ROOM)	7026594	1000	240	NO	✓	
	8113530	1000	434	NO	✓	
	8037218	300	209	NO	✓	
	8113527	1000	434	NO	✓	
EATER ROOM DISCONNECTS	----	----	50-100	NO	✓	
UBSTATION #3 OATING BSMT.	8113529	750	380	NO	NO	
	8037219	200	115	NO	NO	
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
UBSTATION #2	USED OIL		20-30	NO	NO	

## SHEET NO.

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	? FEW DROPS - PAN	No	W.A.U.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	"	
	8113530	1000	434	No	"	
	8037218	300	209	No	"	
	8113527	1000	434	No	"	
SEATER ROOM DISCONNECTS	---	---	50-100	---		
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	W.A.U.
	8037219	200	115	No	No	W.A.U.
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	

DATE Aug 89

PLANT

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.W.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	y
	8113530	1000	434	No	No	y
	8037218	300	209	No	No	y
	8113527	1000	434	No	No	
SEATER ROOM DISCONNECTS	----	----	50-100	No	No	
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	
	8037219	200	115	No	No	
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	

DATE 3-88

**PLANT**

OF

MISCELLANEOUS MATERIAL							
LOCATION	DESCR.	ADDITIONS (GAL)	CONTENTS (GAL)	LEAKS	SPILLS	INSP. BY	
SUBSTATION #2	USED OIL		20-30				
RIVER STATION SUB		1988		YES	NO		
<p>JAN. INSPECTION MADE BY TRANSFORMER</p> <p>FEB ?</p> <p>MARCH BY BILL VINCOLI</p> <p>APRIL R. McP...</p>							



DATE \_\_\_\_\_

5-9-88

PLANT

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER No	
TRANSFORMER INSPECTION - MONTHLY					61		
SUBJECT						CALCULATIONS	
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	FILM IN PAN YES	No	W.A.V.	
SUBSTATION #2 (INVEYOR ROOM)	7026594	1000	240	No	No		
	8113530	1000	434	No	No		
	8037218	300	209	YES	No		
	8113527	1000	434	YES	No		
EATER ROOM DISCONNECTS	—	—	50-100	No	No		
SUBSTATION #3 (NG BASEMENT)	8113529	750	380	No	No		
	8037219	200	115	No	No		

MISCELLANEOUS MATERIAL

[illegible]

OF

DESCRIPTION OF JOB U- TRANSFORMER INSPECTION-MONTHLY	DEPARTMENT C1	JOB ORDER No.
SUBJECT ANGEL ST. MILL		CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	N.V.	
SUBSTATION #2 (INVEYOR ROOM)	7026594	1000	240	NO	NO		
	8113530	1000	434	NO	NO		
	8037218	300	209	NO	NO		
	8113527	1000	434	NO	NO		
EATER ROOM 'S CONNECTS	—	—	50-100	NO	NO		
SUBSTATION #3 (IN BASEMENT)	8113529	750	380	NO	NO		
	8037219	200	115	NO	NO		

MISCELLANEOUS MATERIAL

[illegible]





DATE \_\_\_\_\_

9-4-88

**PLANT**

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER NO.	
SUBJECT						CALCULATIONS	
TRANSFORMER INSPECTION-MONTHLY					61		
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	D.P.V	
SUBSTATION #2 (INVEYOR ROOM)	7026594	1000	240	No	No		
	8113530	1000	434	No	No		
	8037218	300	209	No	No		
	8113527	1000	434	No	No		
EATER ROOM DISCONNECTS	—	—	50-100	No	No		
SUBSTATION #3 (W/ BASEMENT)	8113529	750	380	No	No		
	8037219	200	115	No	No		

MISCELLANEOUS MATERIAL

[illegible]

10-4-88

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER NO.	
TRANSFORMER INSPECTION-MONTHLY					61		
SUBJECT						CALCULATIONS	
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.U.	
SUBSTATION #2 (ONVEYOR ROOM)	7026594	1000	240	No	No	}	
	8113530	1000	434	No	No		
	8037218	300	209	No	No		
	8113527	1000	434	No	No		
FEATER ROOM DISCONNECTS	—	—	50-100	No	No		
SUBSTATION #3 (NG BASEMENT)	8113529	750	380	No	No	}	
	8037219	200	115	No	No		

MISCELLANEOUS MATERIAL

[illegible]



## SHEET NO.

OF

61



E June - '87

**OF**

ANGEL ST. MILL

MISCELLANEOUS MATERIAL

[illegible]

## SHEET NO.

OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER NO.
SUBJECT	61	CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.U.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
EATER ROOM DISCONNECTS	----	----	50-100	No	No	
SUBSTATION #3 (OATING BSMT.)	8113529	750	380	No	No	
	8037219	200	115	No	No	

## MISCELLANEOUS MATERIAL

[illegible]

## SHEET NO.

OF

DESCRIPTION OF JOB	DEPARTMENT 61	JOB ORDER NO.
SUBJECT		CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.U.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	}
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
EATER ROOM DISCONNECTS	----	----	50-100	No	No	
SUBSTATION #3 (BOILING BSMT.)	8113529	750	380	No	No	
	8037219	200	115	No	No	

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
JBSTATION #2	USED OIL		20-30	N/O	N/O	W.A.U.

## ENGINEERING CALCULATIONS

SHEET NO.

DATE *March, 1989*

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	<i>No</i>	<i>No</i>	<i>D.V.</i>
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	<i>No</i>	<i>No</i>	<i>"</i>
	8113530	1000	434	<i>No</i>	<i>No</i>	<i>"</i>
	8037218	300	209	<i>No</i>	<i>No</i>	<i>"</i>
	8113527	1000	434	<i>No</i>	<i>No</i>	<i>"</i>
EATER ROOM DISCONNECTS	----	----	50-100	<i>No</i>	<i>No</i>	<i>"</i>
SUBSTATION #3 COATING BSMT.	8113529	750	380	<i>No</i>	<i>No</i>	<i>"</i>
	8037219	200	115	<i>No</i>	<i>No</i>	<i>"</i>
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	<i>No</i>	<i>No</i>	<i>D.V.</i>

## ENGINEERING CALCULATIONS

SHEET NO.

DATE April 89.

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPIILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	MJ
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	MJ
	8113530	1000	434	NO	NO	MJ
	8037218	300	209	NO	NO	MJ
	8113527	1000	434	NO	NO	MJ
EATER ROOM DISCONNECTS	----	----	50-100	NO	NO	MJ
SUBSTATION #3 (BOATING BSMT.)	8113529	750	380	NO	NO	MJ
	8037219	200	115	NO	NO	MJ

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPIILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	NO	NO	MIKE JAME

## SHEET NO.

OF

JOB ORDER NO.

## CALCULATIONS

SUBSTATION #2

INSPECTED  
BY

W.A.U.

## SHEET NO.

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	? IN PAN	NO	WAW.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	✓	
	8113530	1000	434	NO	✓	
	8037218	300	209	NO	✓	
	8113527	1000	434	NO	✓	
EATER ROOM DISCONNECTS	----	----	50-100	NO	✓	
SUBSTATION #3 (BOILING BSMT.)	8113529	750	380	NO	NO	
	8037219	200	115	NO	NO	
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	NO	NO	

## ENGINEERING CALCULATIONS

SHEET NO.

DATE *July 89*

PLANT

OF

DESCRIPTION OF JOB				DEPARTMENT <i>61</i>	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	? <i>FEW DROPS - PAN</i>	<i>No</i>	<i>W.A.U.</i>
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	<i>No</i>	<i>"</i>	
	8113530	1000	434	<i>No</i>	<i>"</i>	
	8037218	300	209	<i>No</i>	<i>"</i>	
	8113527	1000	434	<i>No</i>	<i>"</i>	
EATER ROOM DISCONNECTS	----	----	50-100	-----		
SUBSTATION #3 (OILING BSMT.)	8113529	750	380	<i>No</i>	<i>No</i>	<i>W.A.U.</i>
	8037219	200	115	<i>No</i>	<i>No</i>	<i>W.A.U.</i>
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	<i>No</i>	<i>No</i>	

## ENGINEERING CALCULATIONS

SHEET NO.

DATE *Aug 89*

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED --- BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	<i>No</i>	<i>No</i>	<i>W.A.W.</i>
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	<i>No</i>	<i>No</i>	<i>r</i>
	8113530	1000	434	<i>No</i>	<i>No</i>	<i>r</i>
	8037218	300	209	<i>No</i>	<i>No</i>	<i>y</i>
	8113527	1000	434	<i>No</i>	<i>No</i>	
HEATER ROOM DISCONNECTS	----	----	50-100	<i>No</i>	<i>No</i>	
SUBSTATION #3 COATING BSMT.	8113529	750	380	<i>No</i>	<i>No</i>	
	8037219	200	115	<i>No</i>	<i>No</i>	
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	<i>No</i>	<i>No</i>	



## SHEET NO.

10/6/89

61

OF

DEPARTMENT

JOB ORDER NO.

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	K. E
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	"
	8113530	1000	434	No	No	"
	8037218	300	209	No	No	"
	8113527	1000	434	No	No	"
HEATER ROOM (DISCONNECTS)	----	----	50-100	No	No	"
SUBSTATION #3 (COATING BSMT.)	8113529	750	380	No	No	"
	8037219	200	115	No	No	"

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	K.E.

## SHEET NO.


DATE 11/5/89

OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER NO.
SUBJECT	61	CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
HEATER ROOM DISCONNECTS	----	----	50-100	No	No	
SUBSTATION #3 BOATING BSMT.	8113529	—750	380	No	No	
	8037219	200	115	No	No	

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	

## ENGINEERING CALCULATIONS

SHEET NO.

DATE

DEC-2-89

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	DPV
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	DPV
	8113530	1000	434	No	No	DPV
	8037218	300	209	No	No	DPV
	8113527	1000	434	No	No	"
HEATER ROOM DISCONNECTS	----	----	50-100	No	No	"
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	"
	8037219	200	115	No	No	"

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	DPV

DATE

PLANT

OF

DESCRIPTION OF JOB

TRANSFORMER INSPECTION - MONTHLY

DEPARTMENT

61

JOB ORDER

SUBJECT

ANGEL ST. MILL

CALCULATIONS

TRANSFORMER  
LOCATION

SERIAL  
NUMBER

KVA  
RATING

CONTENTS  
(GALLONS)

LEAKS  
(YES-NO)

SPILL  
(YES-NO)

INSPECTED  
BY

SUB STATION #1  
(POWER HOUSE)

8113528

750

380

NO

NO

Deft 61

SUBSTATION #2  
(CONVEYOR ROOM)

7026594

1000

240

NO

"

"

8113530

1000

434

NO

"

"

8037218

300

209

NO

"

"

8113527

1000

434

NO

"

"

BEATER ROOM  
DISCONNECTS

—

—

50-100

NO

"

"

SUBSTATION #3  
(LIFTING BASEMENT)

8113529

750

380

NO

"

"

8037219

200

115

NO

"

"

MISCELLANEOUS MATERIAL

LOCATION

DESCR.

ADDITIONS  
(GAL.)

CONTENTS  
(GAL.)

LEAKS

SPILLS

INSP.  
BY

SUBSTATION #2

USED OIL

20-30

NO

"

"

## PLANT

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER
TRANSFORMER INSPECTION - MONTHLY					DEPT-61	
SUBJECT						CALCULATION
ANGEL ST. MILL						
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y.
SUB STATION #1 (POWER HOUSE)	8113528	750	380	YES	NO	BR
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	BR
	8113530	1000	434	NO	NO	BR
	8037218	300	209	NO	NO	BR
	8113527	1000	434	YES?	NO	BR
BEATER ROOM DISCONNECTS	-	-	50-100	NO	NO	BR
SUBSTATION #3 (COATING BASEMENT)	8113529	750	380	NO	NO	BR
	8037219	200	115	NO	NO	BR

MISCELLANEOUS MATERIAL

LOCATION	DESCR.	ADDITIONS (GAL.)	CONTENTS (GAL.)	LEAKS	SPIILLS	INSP. BY
SUBSTATION #2	USED OIL		20-30	No	No	BV
MCC in CONVEYOR Room	136880	1500	DRY Type			

# ST REGION REGIS

PAPER COMPANY

### DESCRIPTION OF JOB

DEPARTMENT

**JOB ORDER No**

TRANSFORMER INSPECTION-MONTHLY

61

**SUBJECT**

## CALCULATIONS

ANGEL ST. MILL

[illegible]

DATE MARCH-87 , PLANT . OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER NO.	
SUBJECT						CALCULATIONS	
TRANSFORMER INSPECTION-MONTHLY					61		
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y.	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.U.	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No		
	8113530	1000	434	No	No		
	8037218	300	209	No	No		
	8113527	1000	434	No	No		
BEATER ROOM DISCONNECTS	—	—	50-100	No	No		
SUBSTATION #3 (CO. #6 BASEMENT)	8113529	750	380	No	No		
	8037219	200	115	No	No		

MISCELLANEOUS MATERIAL

[illegible]

DATE \_\_\_\_\_

April - 87

**PLANT**

OF

### DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER No

# TRANSFORMER INSPECTION-MONTHLY

61

**SUBJECT**

## CALCULATIONS

ANGEL ST. MILL

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	D.P.V.	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No		
	8113530	1000	434	No	No		
	8037218	300	209	No	No		
	8113527	1000	434	No	No		
BEATER ROOM DISCONNECTS	—	—	50-100	No	No		
SUBSTATION #3 (CAFETERIA BASEMENT)	8113529	750	380	No	No		
	8037219	200	115	No	No		

MISCELLANEOUS MATERIAL

[illegible]



DATE \_\_\_\_\_

PLANT

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER
TRANSFORMER INSPECTION-MONTHLY					61	
SUBJECT					CALCULATION	
ANGEL ST. MILL						
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	Elect
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	
	8113530	1000	434	NO	NO	
	8037218	300	209	NO	NO	
	8113527	1000	434	NO	NO	
BEATER ROOM DISCONNECTS	—	—	50-100	NO	NO	
SUBSTATION #3 (ATING BASEMENT)	8113529	750	380	NO	NO	
	8037219	200	115	NO	NO	

MISCELLANEOUS MATERIAL

[illegible]

DATE 11-6-85 PLANT \_\_\_\_\_ OF \_\_\_\_\_

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER NO.
TRANSFORMER INSPECTION - MONTHLY					61	
SUBJECT						CALCULATIONS
ANGEL ST. MILL					B.H.	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	61
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	"	"	61
	8113530	1000	434	"	"	61
	8037218	300	209	"	"	61
	8113527	1000	434	"	"	61
BEATER ROOM DISCONNECTS	—	—	50-100	"	"	61
SUBSTATION #3 (TINE BASEMENT)	8113529	750	380	"	"	61
	8037219	200	115	"	"	61

MISCELLANEOUS MATERIAL

[illegible]

DATE *12-3-85* PLANT *A* OF

DESCRIPTION OF JOB  
*TRANSFORMER INSPECTION - MONTHLY*

DEPARTMENT  
*61*

JOB ORDER N

SUBJECT

*ANGEL ST. MILL*

CALCULATIONS

TRANSFORMER  
LOCATION

SERIAL  
NUMBER

KVA  
RATING

CONTENTS  
(GALLONS)

LEAKS  
(YES-NO)

SPILL  
(YES-NO)

INSPECTED  
BY

*SUB STATION #1  
(POWER HOUSE)*

*8113528*

*750*

*380*

*NO*

*NO*

*R.M.H.*

*SUBSTATION #2  
(CONVEYOR ROOM)*

*7026594*

*1000*

*240*

*NO*

*NO*

*R.M.H.*

*8113530*

*1000*

*434*

*NO*

*NO*

*"*

*8037218*

*300*

*209*

*NO*

*NO*

*"*

*8113527*

*1000*

*434*

*NO*

*NO*

*"*

*BEATER ROOM  
DISCONNECTS*

*—*

*—*

*50-100*

*NO*

*NO*

*"*

*SUBSTATION #3  
(L TING BASEMENT)*

*8113529*

*750*

*380*

*NO*

*NO*

*"*

*8037219*

*200*

*115*

*NO*

*NO*

*"*

*MISCELLANEOUS MATERIAL*

LOCATION

DESCR.

ADDITIONS  
(GAL)

CONTENTS  
(GAL)

LEAKS

SPILLS

INSP.  
BY

*SUBSTATION #2*

*USED OIL*

*20-30*

*NO*

*NO*

*"*



DATE 2-16-86 PLANT Angel OF 1

DESCRIPTION OF JOB  
TRANSFORMER INSPECTION - MONTHLY

DEPARTMENT  
Elect

JOB ORDER

SUBJECT  
ANGEL ST. MILL

61

CALCULATION

TRANSFORMER  
LOCATION

SERIAL  
NUMBER

KVA  
RATING

CONTENTS  
(GALLONS)

LEAKS  
(YES-NO)

SPILL  
(YES-NO)

INSPECTED  
BY

SUB STATION #1  
(POWER HOUSE)

8113528

750

380

NO

NO

R11/14

SUBSTATION #2  
(CONVEYOR ROOM)

7026594

1000

240

8113530

1000

434

8037218

300

209

8113527

1000

434

BEATER ROOM  
DISCONNECTS

—

—

50-100

SUBSTATION #3  
(L TING BASEMENT)

8113529

750

380

8037219

200

115

MISCELLANEOUS MATERIAL

LOCATION

DESCR.

ADDITIONS  
(GAL.)

CONTENTS  
(GAL.)

LEAKS

SPILLS

INSP.  
BY

SUBSTATION #2

USED OIL

20-30

NO

NO

R11/14

DATE 3-10-86 PLANT Amv OF 1

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER	
SUBJECT					CALCULATION	
TRANSFORMER INSPECTION - MONTHLY				61		
ANGEL ST. MILL				Elect		
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y.
SUB STATION #1 (POWER HOUSE)	8113528	750	380			Hick
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240			
	8113530	1000	434			
	8037218	300	209			
	8113527	1000	434			
BEATER ROOM DISCONNECTS	—	—	50-100			
SUBSTATION #3 (MILLING BASEMENT)	8113529	750	380			Hick
	8037219	200	115			

MISCELLANEOUS MATERIAL

[illegible]

4-15-86

NT *Amac* OF

OF

DEPARTMENT

**JOB ORDER**

# TRANSFORMER INSPECTION-MONTHLY

61

**SUBJECT**

ANGEL ST. MILL

**CALCULATIC**

*E/ce*

MISCELLANEOUS MATERIAL

[illegible]

DATE 8-1-86

**PLANT**

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER No	
TRANSFORMER INSPECTION-MONTHLY					61		
SUBJECT						CALCULATIONS	
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	YES	NO	W.A.U.	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO		
	8113530	1000	434	NO	NO		
	8037218	300	209	YES	NO		
	8113527	1000	434	NO	NO		
BEATER ROOM DISCONNECTS	—	—	50-100	NO	NO		
SUBSTATION #3 (CAF & BASEMENT)	8113529	750	380	NO	NO		
	8037219	200	115	NO	NO		

MISCELLANEOUS MATERIAL

LOCATION	DESCR.	ADDITIONS (GAL)	CONTENTS (GAL)	LEAKS	SPIILLS	INSP. BY
SUBSTATION #2	USED OIL		20-30	No	No	W.A.U.
BOTH	ITEMS	ABOVE	MAY BE	JUST	OLD	LEAKS
	BUT	THEY ARE	BEING	NOTED		W.A.U.

DATE \_\_\_\_\_

**PLANT**

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER NO	
SUBJECT						CALCULATIONS	
TRANSFORMER INSPECTION-MONTHLY 9-6-86					61		
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	YES	NO	SW	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	SW	
	8113530	1000	434	NO	NO	SW	
	8037218	300	209	NO	NO	SW	
	8113527	1000	434	NO	NO	SW	
BEATER ROOM DISCONNECTS	-	-	50-100	NO	NO	SW	
SUBSTATION #3 (CONVEYOR BASEMENT)	8113529	750	380	NO	NO	SW	
	8037219	200	115	NO	NO	SW	

MISCELLANEOUS MATERIAL

[illegible]

DATE 10-6-86

PLANT

OF

# TRANSFORMER INSPECTION-MONTHLY

DEPARTMENT

**JOB ORDER**

6.

**SUBJECT**

ANGEL ST. MILL

**CALCULATIC**

50

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	61
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	61
	8113530	1000	434	NO	NO	61
	8037218	300	209	NO	NO	61
	8113527	1000	434	NO	NO	61
BEATER ROOM DISCONNECTS	—	—	50-100	NO	NO	61
SUBSTATION #3 (PILING BASEMENT)	8113529	750	380	NO	NO	61
	8037219	200	115	NO	NO	61

MISCELLANEOUS MATERIAL

LOCATION	DESCR.	ADDITIONS (GAL)	CONTENTS (GAL)	LEAKS	SPIILLS	INSP. BY
SUBSTATION #2	USED OIL		20-30	NO	NO	61
-						
.						

**PAPER COMPANY**

## ENGINEERING CALCULATIONS

DATE NOV - 86

## PLANT

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER NO.	
SUBJECT						CALCULATIONS	
TRANSFORMER INSPECTION - MONTHLY					61		
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.V.	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No		
	8113530	1000	434	No	No		
	8037218	300	209	No	No		
	8113527	1000	434	No	No		
BEATER ROOM DISCONNECTS	-	-	50-100	No	No		
SUBSTATION #3 (CAFETERIA BASEMENT)	8113529	750	380	No	No		
	8037219	200	115	No	No		

MISCELLANEOUS MATERIAL

[illegible]

## INTER-OFFICE CORRESPONDENCE

FROM JACK H. CRABTREE

LOCATION BATTLE CREEK, MI.

DATE MAY 27, 1983

TO

MARK SHAPTON

BOB VALKNER

cc: E. Bender  
R. Johnson  
J. Lambert  
T. Myers  
D. Rollenhagen

SUBJECT: PCB REMOVAL

The truck from Waste Management, Incorporated will be at our location Wednesday, June 1, 1983, to pick up three (3) barrels of liquid PCB.

Pick-Up will take place in the A.M. Please make arrangements to have personnel available to assist the driver in loading.

THANKS

JACK H. CRABTREE

JHC/im



General Offices  
West Nyack Road  
West Nyack, New York 10994  
914/578-7000

April 18, 1983

Mr. Eric Laut  
Chemical Waste Management, Inc.  
4300 W. 123rd Street  
Alsip, IL 60658

SUBJECT: S.I.D. 3-055-83 P.C.B. Disposal  
Battle Creek, Michigan

Dear Mr. Laut:

Enclosed herewith is an Original and Counterpart of Original of the subject document covering the disposal of P.C.B.s located at our Battle Creek, Michigan facility.

If you find these documents to be in order, kindly have your Mr. K. Johnson execute both documents and return the original copy to my attention for further handling.

Very truly yours,

ST. REGIS PAPER COMPANY

A handwritten signature in cursive script, appearing to read "C. P. Cusack".

C. P. Cusack  
Purchasing Manager

CPC:jls  
Enc.

cc: J. Crabtree

**STR**EGIS

Please order the following material:

## TRANSFORMER CONSULTANTS

DIV. OF S. D. MYERS INC.

AKRON, OHIO 44310

DATE \_\_\_\_\_

2-15-85

**PURCHASE ORDER NO.**

CHASE ORDER NO. 23750

SHIP TO

US AT CHAMPION INTL

**DELIVERY LOCATION**

ELECT. SUB STATION

**ATTENTION OF**

DON OPALA

DATE REQUIRED AT PLANT	SHIP VIA
FIRST TWO DAY SHUT DOWN	

F.O.B.

**TERMS**

~~Confirming~~  
~~2-18-85/JOE~~

JOPA NO.

**JOB OR W.O. NUMBER**

PROJECT NUMBER

### SPECIAL INSTRUCTIONS

THIS WORK IS SCHEDULED TO BE COMPLETED THE WEEK

OF 4TH OF JULY SHUT DOWN

FOR; EQUIPMENT -

ALL 2300 VOLT TRANSFORMERS & EQUIP

ORIGINATOR

**AUTHORIZED BY**

APPROVED BY

FORM 39-01-01 R



2CC  
5/6/85  
Copies: Mark Skayie  
Tom Thomas  
Will transform the  
PCB program to  
the Sept 1st  
L. M. Spurgeon

To  
Distribution

Date  
May 1, 1985

From  
R. F. Cashen

Subject  
Critical Date List

Recycled Fiber Division - Battle Creek 30-271

Below is a listing of items critical to the environmental program for your location to serve as a reminder that action is required for compliance with permits or regulations.

Please send this office a copy of all reports to regulatory agencies.

If there is any question, please let me know.

MAY

NPDES MI0029386 (Exp 2/28/88): Monthly Report

Angell Quarterly Transformer Inspection ✓

Angell PCB Annual Report due in June ✓

**Distribution:**

L. M. Spurgeon ✓  
Paul Stofer

**ST REGIS** CorporationUS GOVERNMENT ACQUISITION  
LABELS, PACKING LISTS AND INVOICES

PM 32145 7436

70 EAST MOUNTAIN STREET XXXX  
BATTLE CREEK MICHIGAN 49016  
(616) 963-5511PAGE 1  
REQUISITION NO. RLB177 ANGELL STREET  
BATTLE CREEK, MI 49016

DATE 11/14/84

SEND ALL INVOICES IN QUADRUPPLICATE TO:  
ACCOUNTING DEPTKRAFT/RECYCLED DIVISION  
177 ANGELL STREET

BATTLE CREEK, MICHIGAN 49016-343

SHIP TO US AT:  
ANGELL MILLELECTRICAL DEPT.  
ATTN: DON OPALA

TO:

TRANSFORMER CONSULTANTS  
DIV OF S D MYERS INC  
P O BOX 3575  
AKRON OH 44310

DATE REQUIRED AT PLANT		SHIP VIA	F.O.B.	TERMS
WK OF 11-17-84		BEST WAY	SHIPPING POINT	NET 30
ITEM NO.	QUANTITY	OUR CODE NUMBER OR ACCOUNT	DESCRIPTION	UNIT PRICE
1	1	043-260-03	<p>***CONFIRMING***</p> <p>CHECK, TEST AND RECOMMEND ON THE CONDITION OF OUR POWER TRANSFORMERS TO KEEP UNITS SAFELY WITHIN EPA LAWS</p> <p><i>B#1</i> <i>R# 29348</i></p> <p><i>Complete</i> <i>Don</i></p> <p>SALES AND USE TAX STATUS FOR USE IN INDUSTRIAL PROCESSING</p>	\$790.00

"THE VENDOR REPRESENTS THAT IT IS IN COMPLIANCE WITH EXECUTIVE ORDERS 11246, 11625 AND 11701, AS AMENDED, SECTION 503 OF THE REHABILITATION ACT OF 1973, SECTION 402 OF THE VIETNAM ERA VETERANS READJUSTMENT ASSISTANCE ACT OF 1974 WHICH ARE INCLUDED HEREIN BY REFERENCE, AND THAT IT DOES NOT MAINTAIN OR PROVIDE ANY SEGREGATED FACILITIES FOR ITS EMPLOYEES"

## IMPORTANT

This order must not be filled at higher prices without our authority. Acknowledgment of this order must be made immediately and a copy of the order is enclosed which may be used in making such acknowledgment

By

PURCHASING MANAGER

DATE 3-13-85 PLANT

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER	
TRANSFORMER INSPECTION-MONTHLY					61		
SUBJECT						CALCULATION	
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	YES	NO	61	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	61	
	8113530	1000	434	NO	NO	61	
	8037218	300	209	NO	NO	61	
	8113527	1000	434	NO	NO	61	
BEATER ROOM DISCONNECTS	—	—	50-100	NO	NO	61	
SUBSTATION #3 (CARTING BASEMENT)	8113529	750	380	NO	NO	61	
	8037219	200	115				

MISCELLANEOUS MATERIAL

[illegible]





**PLANT**

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER NO.	
SUBJECT						CALCULATIONS	
TRANSFORMER INSPECTION - MONTHLY					U.I.		
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	YES	No	U.I.	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	U.I.	
	8113530	1000	434	No	No	U.I.	
	8037218	300	209	No	No	U.I.	
	8113527	1000	434	YES	No	U.I.	
BEATER ROOM DISCONNECTS	—	—	50-100	No	No	U.I.	
SUBSTATION #3 (COIL NG BASEMENT)	8113529	750	380	No	No	U.I.	
	8037219	200	115				

MISCELLANEOUS MATERIAL

[illegible]

## JOB ORDER

61

## CALCULATIO

INSPECTED  
B.Y.

Elect Dept

11

17

11

11

"

11

14

INSP.  
By

41

DATE

5-14-85

PLANT

OF

DESCRIPTION OF JOB

TRANSFORMER INSPECTION - MONTHLY

DEPARTMENT

61

JOB ORDER NO.

SUBJECT

ANGEL ST. MILL

CALCULATION

TRANSFORMER  
LOCATION

SERIAL  
NUMBER

KVA  
RATING

CONTENTS  
(GALLONS)

LEAKS  
(YES-NO)

SPILL  
(YES-NO)

INSPECTED  
BY

SUB STATION #1  
(POWER HOUSE)

8113528

750

380

Yes

NO

Elec Dept  
61

SUBSTATION #2  
(CONVEYOR ROOM)

7026594

1000

240

NO

NO

11

8113530

1000

434

NO

NO

11

8037218

300

209

NO

NO

11

8113527

1000

434

NO

NO

11

BEATER ROOM  
DISCONNECTS

—

—

50-100

NO

NO

11

SUBSTATION #3  
(COATING BASEMENT)

8113529

750

380

NO

NO

11

8037219

200

115

NO

NO

11

MISCELLANEOUS MATERIAL

LOCATION

DESCR.

ADDITIONS  
(GAL.)

CONTENTS  
(GAL.)

LEAKS

SPILLS

INSP.  
BY

SUBSTATION #2

USED OIL

20-30

NO

NO

11

## PURCHASE ORDER

**ST REGIS** PAPER COMPANY
THIS ORDER NO. MUST APPEAR ON A  
LABELS, PACKING LISTS AND INVOICE

PM 30543 0923

 79 EAST FOUNTAIN STREET  
 BATTLE CREEK, MICHIGAN 49016  
 (616) 963-5511

 PAGE 1  
 REQUISITION NO. MAA

DATE 5/31/83

SEND ALL INVOICES IN QUADRUPLICATE TO:

 ACCOUNTING DEPT  
 RECYCLED FIBER DIV.  
 79 EAST FOUNTAIN STREET  
 BATTLE CREEK, MICHIGAN 49017-419  
 SHIP TO US AT:

ATTN - JACK CRABTREE

TO:

 CHEMICAL WASTE MANAGEMENT, INC  
 HWY. 17 AT MILE MARKER #163  
 EMELLE, ALABAMA 35459

DATE REQUIRED AT PLANT		SHIP VIA	F.O.B.	TERMS
6/1/83		BEST WAY	SHIPPING POINT	NET 10 DAYS
ITEM NO.	QUANTITY	OUR CODE NUMBER OR ACCOUNT	DESCRIPTION	UNIT PRICE
			***CONFIRMING***	
	3	047-249-18	CHARGE FOR DISPOSAL OF LIQUID P.C.B.	\$250.00/DI
	3		CHARGE FOR TRANSPORTATION TO DISPOSAL SITE	\$211.00/DI
NOTE: THIS WORK IS SCHEDULED FOR 6/1/83.				
SALES AND USE TAX STATUS FOR USE IN INDUSTRIAL PROCESSING				

"VENDOR OR CONTRACTOR REPRESENTS THAT IT IS IN COMPLIANCE WITH THE REQUIREMENTS OF EXECUTIVE ORDER 11246, AS AMENDED, RELATING TO EQUAL EMPLOYMENT OPPORTUNITY AND NON-SEGREGATED FACILITIES; EXECUTIVE ORDER 11625 RELATING TO MINORITY BUSINESS ENTERPRISE; EXECUTIVE ORDER 11701 (CFR 60-250) RELATING TO THE EMPLOYMENT OF VETERANS; AND THE REHABILITATION ACT OF 1973 (41 CFR 60-741) RELATING TO THE EMPLOYMENT OF HANDICAPPED PERSONS."

We Hereby Acknowledge And Accept This Order Subject To The Terms, Conditions And Specifications Set Forth In The Original. Shipments Will Be Made As Follows

6/10/83

Date

Chemical Waste Management

Vendor

Stephanie Rye

Authorized Signature

DR

ACKNOWLEDGMENT - RETURN

[illegible]

**OF**

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER No.	
TRANSFORMER INSPECTION-MONTHLY					61		
SUBJECT						CALCULATIONS B	
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	YES	No	61	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	61	
	8113530	1000	434	No	No	61	
	8037218	300	209	No	No	61	
	8113527	1000	434	YES	No	61	
BEATER ROOM DISCONNECTS	—	—	50-100	No	No	61	
SUBSTATION #3 (COAL & BASEMENT)	8113529	750	380	No	No	61	
	8037219	200	115				

MISCELLANEOUS MATERIAL

[illegible]

DATE 1-24-80

## PLANT

**OF**

ANGEL ST. MILL

MISCELLANEOUS MATERIAL

[illegible]

DATE \_\_\_\_\_

3-13-85

**PLANT**

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER N	
TRANSFORMER INSPECTION-MONTHLY					61		
SUBJECT						CALCULATIONS	
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	YES	NO	61	
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	8113530	1000	434	NO	NO	61	
	8037218	300	209	NO	NO	61	
	8113527	1000	434	NO	NO	61	
BEATER ROOM DISCONNECTS	—	—	50-100	NO	NO	61	
SUBSTATION #3 (L TING BASEMENT)	8113529	750	380	NO	NO	61	
	8037219	200	115				

MISCELLANEOUS MATERIAL

[illegible]



GE Industry  
Sales & Services

Industry Services Engineering  
General Electric Company  
610 Front Street, NW, Grand Rapids, MI 49503  
Tel: 616/412/2319

May 19, 1988

Quotation No. 389E00165

Waldorf Corporation  
177 Angell Street  
Battle Creek, Michigan 49016

Attention: Mr. Steve Weers

Reference: PCB Transformer Disposal

Gentlemen:

In response to your request, the General Electric Company, Industrial Sales and Services Division, Grand Rapids Office, is pleased to submit our proposal to provide services at your Battle Creek facility as follows:

A. Remove and dispose of one (1) 200 KVA PCB transformer.

ISSD will provide technical supervision, craft labor, tools, and equipment required to complete the removal work.

A qualified field engineer will supervise technical and contractor personnel for the overall project.

A PCB certified supervisor will direct the actual PCB material handling and disposal.

WORKSCOPE:

Remove and dispose of the following transformer:

A. 200 KVA - S/N 8037220.

Work on the transformer will include the following:

1. Disconnect HV and LV connections as necessary.
2. Remove the transformer.
3. Decommission and dispose of PCB liquid and transformer carcass.
4. Dispose of any other waste we generate while on-site pertaining to this portion of the work.
5. Provide disposal certificates and signed manifests to show proper disposal after completion of the job.

CUSTOMER RESPONSIBILITIES:

1. The customer shall provide free and safe access to the job site in order to perform this work.
2. All scheduling and switching shall be the responsibility of the customer. The transformer must be out of service to perform this work.
3. It shall be the customer's responsibility to provide an uninterrupted flow of work and/or access to the equipment. If delays are incurred, their associated costs will be billed as extras.
4. The customer must provide reasonable, mutually agreeable access to each equipment and work area. This includes removal and restoration of any and all obstructions in order to provide a clear path for rigging out the transformer between the present location and the closest convenient place to locate a truck.
5. Provide the required EPA I.D. number and PCB item out of service date.

PRICE, PAYMENT AND ESCALATION:

For the afore-mentioned scope of services we are pleased to quote you  
.....\$ 9,972.00 Lot Net.

Our terms of payment are net due upon receipt of invoice.

Title shall pass on a pro-rata basis as work is completed.

The prices quoted herein are firm for a period of thirty (30) days after which they shall be subject to adjustment.

The price quoted in this proposal is contingent upon all work being performed on a straight time basis, and all work being completed by the end of 1988.

BASIS OF PROPOSAL:

1. The terms and conditions of the attached GEISS Form 487 (CS), and the attached PCB clauses, GEISS Form 487 (PCB), shall apply unless specifically stated otherwise in this proposal.
2. These units are presently owned by Waldorf Corporation and title cannot be transferred to a "middle agent" or "distributor", etc. for resale to another ultimate user.
3. Title to the toxic waste will transfer on a per event basis at the beginning of on-site work on each particular piece of equipment .

This document contains proprietary information and is submitted upon the expressed condition that the information contained herein will not be used directly or indirectly in any way detrimental to the interest of the General Electric Company.

We thank you for allowing us to be of service, and hope to be favored with your order. I am sure you will find our PCB terms to be the best available in the industry. Should any further questions arise, please do not hesitate to contact me at this office.

Sincerely;



Warren J Thaler  
Area Engineer  
ISSD - Industrial.



# GE Industry Sales & Services

## Conditions of Sale for Services

The sale of any service and incidental goods ordered by the Customer is expressly conditioned upon the terms and conditions contained or referred to herein. Any additional or different terms and conditions set forth in the Customer's purchase order or similar communication are objected to and will not be binding upon GE Industry Sales & Services (herein called GE) unless specifically assented to in writing by GE's authorized representative. Authorization by the Customer, whether written or oral, to furnish services and incidental goods will constitute acceptance of these terms and conditions.

### 1. SERVICE DEFINITIONS

a. **COMPLETE INSTALLATION/MAINTENANCE/CONSTRUCTION** is any combination of planning, management, labor, tools and incidental goods to move, install, assemble, modify, repair, modernize, start-up and/or maintain equipment.

b. **FIELD ENGINEERING** is engineering and technical guidance, advice and counsel based upon GE's current engineering, manufacturing, installation and operating practices, as related to work performed by others.

c. **JOB MANAGEMENT** is any combination of planning, scheduling, monitoring, selection of crews, as specified in the contract documents, but does not include responsibility for supervision of labor or for the quality or acts of craft labor.

d. **TRAINING** is an instructional course prepared and provided by personnel proficient in the subject matter.

e. **ENGINEERING STUDY/INSPECTION/TEST** is system design and analysis of equipment or systems by competent, experienced personnel using special techniques, instruments or devices with the objective of reporting opinions or recommendations relating to the current condition and future serviceability of the equipment or system.

f. **PCB SERVICE** is any combination of relocation, testing, containment, retrofit/refill or retrofit/replacement of PCB material.

### 2. WARRANTY

a. GE warrants to the Customer that goods and services sold will be free from defects in material and workmanship and will conform to any mutually agreed upon specifications. If any failure to meet this warranty appears within one year from the date of shipment of the goods or completion of the services, on the condition that GE be promptly notified in writing thereof, GE will correct any such failure by reperforming any defective portion of the services furnished and supplying conforming goods. If the contract covers complete installation, maintenance or construction, GE will correct the failure by reperforming any defective service and either repairing or replacing (at its option) any defective goods furnished and any damage to the equipment upon which the service was performed resulting from defective service. If reperformance is not practicable, GE will furnish without charge services in an amount essentially equal to those which, in GE's sole judgment, would have been required for reperformance. If the contract covers job management, GE's sole obligation will be to replace the job manager for the balance of the job. If the contract covers training, GE's sole obligation will be to replace the assigned instructor and reperform the training.

b. The preceding paragraph a sets forth the exclusive remedy for all claims based on failure of or defect in goods or services sold hereunder whether the failure or defect arises before or during the warranty period and whether a claim, however instituted, is based on contract, indemnity, warranty (including negligence), strict liability or otherwise. The foregoing warranty is exclusive and is in lieu of all other warranties whether written or implied or statutory. **AS TO ALL GOODS SOLD, NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PARTICULAR PURPOSE SHALL APPLY.**

### 3. PATENTS

a. GE warrants that the goods sold hereunder, and any part thereof shall be delivered free of any rightful claim of any third party for infringement of any United States patent. If notified promptly in writing and given authority, information and assistance, GE shall defend, or may settle at its expense, any suit or proceeding against the Customer based on a claimed infringement which would result in a breach of this warranty, and GE shall pay all damages and costs awarded therein against the Customer due to such breach. In case any goods are in such suit held to constitute such an infringement and the use for the purpose intended of said goods is enjoined, GE shall, at its expense and option, either procure for the Customer the right to continue using said goods or replace same with noninfringing goods, or modify same so they become noninfringing, or remove the goods and refund the purchase price (less reasonable depreciation for any period of use) and any transportation costs separately paid by the Customer. The foregoing states the entire liability of GE for patent infringement.

b. The preceding paragraph a shall not apply to any goods specified by the Customer and not of GE manufacture, or manufactured to the Customer's design, or to the use of any goods furnished hereunder in conjunction with any other goods in a combination not furnished by GE as a part of the transaction. As to any such goods, or use in such combination, GE assumes no liability whatsoever for patent infringement and the Customer will hold GE harmless against any infringement claim arising therefrom.

### 4. EXCUSABLE DELAYS

a. GE shall not be liable for delay due to (1) causes beyond its reasonable control, or (2) acts of God, acts of the Customer, prerequisite work by others, acts of civil or military authority, government priorities, fires, strikes or other labor disturbances, floods, epidemics, war, riot, delays in transportation or car shortages, or (3) inability to obtain or delay in obtaining, due to causes beyond its reasonable control, suitable labor, materials, or facilities. In the event of any such delay, the time of performance shall be extended for a period equal to the time lost by reason of the delay.

b. In the event GE is delayed by acts of the Customer or by prerequisite work by other contractors or suppliers of the Customer, GE shall be entitled to an equitable price adjustment in addition to extension of the time of performance.

### 5. SALES AND SIMILAR TAXES

In addition to the price specified herein, the Customer shall pay or reimburse GE for the gross amount of any present or future sales use, excise, value-added or other similar tax applicable to the price, sale or furnishing of any services or goods hereunder, or to their use by GE or the Customer or the Customer shall provide GE with evidence of exemption acceptable to the taxing authorities.

### 6. PAYMENTS AND FINANCIAL CONDITION

a. Pro rata payments shall become due as shipments are made or as work is completed. If GE consents to delayed shipments of goods, payment shall become due on the date when GE is prepared to make shipment. All payments shall be made without set-off for claims arising out of other sales by GE.

b. If the financial condition of the Customer at any time does not, in the judgment of GE, justify continued performance on the terms of payment previously agreed upon, GE may require full or partial payment in advance or shall be entitled to terminate the contract and receive



# GE Industry Sales & Services

## Supplemental Conditions for PCB Services

For PCB Services the conditions contained herein shall supplement the CONDITIONS OF SALE, GEISS Form 487(CS)

### 1. DEFINITIONS

a "PCB Service" shall mean the service described in the attached quotation or contract to the extent that such services involve PCB Material. PCB Service may include removal, disposal, repair, testing, clean-up, replacement of insulating fluids and all other activities (such as transportation, storage, etc.) incident thereto.

b "PCB Material" shall mean the equipment or other material containing or contaminated with polychlorinated biphenyl (PCB) identified in the attached quotation or contract as well as all the parts and the contents thereof and all material used in the performance of the PCB Service which comes into contact with PCB Material.

c "Release" shall mean with respect to the PCB Material the intentional or unintentional spilling, migration or escape of the PCB Material or any part thereof either alone or in connection with any other substance, including, but not limited to, water, air and smoke.

### 2. PCB MATERIAL TERMS

a GE represents that it has knowledge of the requirements associated with the use, collection, handling, storage, transportation and disposal of the PCB Material, that it has experience in such use, collection, handling, storage, transportation and disposal, and that it shall have instructed its personnel, subcontractors and agents in the proper procedures to be used in the performance of PCB Service.

b GE will perform the PCB Service in compliance with any and all federal, state and local laws and regulations pertaining thereto, including but not limited to, the regulations contained in 40 CFR Part 761, and will have obtained all licenses and permits required by law to engage in the activities necessary to perform the PCB Service.

c GE warrants that storage, transportation and disposal of the PCB Material will be done by means of facilities and vehicles which are fully licensed by appropriate federal, state and local authorities, as required.

d The Customer warrants that it has full legal title to, or the power and right to transfer title to, the PCB Material (including, without limitation, all licenses or permits required by law or regulation to be obtained by the owner and/or generator of the material) and that the Customer has no knowledge that the PCB Material is not as otherwise described in the contract documents.

e If the Customer provides containers for transportation and/or storage of the PCB Materials, such containers shall comply with all applicable law. GE's sole remedy for the Customer's default under this paragraph is that upon discovery of one or more non-complying containers, GE may provide complying containers and charge the Customer for the containers, the labor needed to transfer the PCB Material into complying containers, and any additional disposal charges.

f To the extent that any PCB Material is to be disposed of, GE will take title to such PCB Material when it is loaded on a transport vehicle provided by GE or when the PCB Material is delivered to a GE facility, whichever is earlier. If GE and Customer have agreed in writing that title will pass at an earlier time, such agreement will govern. GE takes title to the PCB Material only for the purpose of disposal and shall not

use or transfer title to the PCB Material for any other purpose. In the event that the PCB Material is later determined to be of a nature or character different from that described in the contract documents, title shall pass back to the Customer and, unless otherwise agreed, GE may return the PCB material to the Customer at the Customer's expense and the Customer shall be liable for and shall indemnify GE against all losses, damages and claims caused by the PCB material including any damage to the environment, except to the extent that such losses, damages or claims are the result of the negligent or other illegal act or omission of GE or its subcontractors.

g Unless the Customer has otherwise advised GE in writing before commencement of the PCB Service, the Customer represents that any of the PCB material which is to be disposed of has not been in storage for disposal or out of service prior to the start of work. The Customer shall indemnify GE against all loss, cost and liability including fines, penalties, attorneys' fees and costs of defense and extra costs of disposal, on account of any failure of GE to cause the disposal of any PCB material prior to one year after the PCB Material first went into storage for disposal because of reliance on the representation described in the preceding sentence or on any false or mistaken representation by the Customer concerning the date when the PCB material first went into storage for disposal.

h Unless otherwise agreed or required by law, GE will not test the PCB Material to determine the level of PCB concentration without the prior consent of the Customer. Unless there is a determination of PCB concentration made or accepted by GE:

- (1) GE may charge the disposal price for PCB Material of the highest concentration,
- (2) GE may use special procedures to prevent contamination of its facilities and equipment and make an appropriate extra charge for such service, and
- (3) GE shall not be liable to the Customer for any level of PCB concentration revealed by a subsequent test.

i The following rules apply in the case of any replacement of insulating fluid for the purpose of reclassifying any equipment under 40CFR 761.30(a)(2)(v), (b)(2)(vi) or (h)(2)(v):

- (1) Unless otherwise agreed, the Customer shall be responsible for operating the equipment as required by regulation or otherwise during a 90-day in-service period.
- (2) GE will test to determine the level of PCB concentration prior to fluid replacement and will make a compliance retest after the 90-day in-service period.
- (3) GE guarantees that the PCB concentration shown by a compliance retest will not exceed the concentration level stated in the contract documents or if no level is stated then that the PCB concentration will be such that the equipment will be reclassified to the next lower class. The Customer's sole remedy for a breach of this guarantee is that GE will reperform the service to achieve the results guaranteed. GE shall not be responsible for any increase in PCB concentration shown by testing after a successful compliance retest.

j Subject to the provisions of paragraph 2 k below, in the event of the failure by GE, its employees, agents and subcontractors to comply with any applicable federal, state or municipal law, regulation or rule which directly or indirectly regulates or affects the use, collection, handling, storage, transportation or disposal of the PCB Material or the release of all or any part of the PCB material prior to the completion of the

(Continued on reverse)

**DNR**  
**MICHIGAN DEPARTMENT**  
**OF NATURAL RESOURCES**

DO NOT WRITE IN THIS SPACE  
 ATT. ☐ DIS ☐ REJ. ☐ PR ☐

1979 as amended and Act 136 P.A. 1969  
 Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136 P.A. 1969

Please print or type

Form Approved OMB No 2050-0039 Expires 9 30 88

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1 800 292 4708 OR OUT OF STATE AT 517 373 7860 AND THE NATIONAL RESPONSE CENTER AT 1 800-424-8802 24 HOURS PER DAY

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1 Generator's US EPA ID No MI 2700137580		Manifest Document No 00901		2 Page 1 of 1		Information in the shaded areas is not required by Federal law	
3 Generator's Name and Mailing Address STEVE WEERS WALDORF PAPER 177 ANGELL ST. BATTLECREEK, MI 49016				A State Manifest Document Number MI 1049869		B State Generator's ID			
4 Generator's Phone ( 616 )963-5511				6 US EPA ID Number 0HP004527008		C State Transporter's ID			
5 Transporter 1 Company Name GENERAL ELECTRIC COMPANY				8 US EPA ID Number		D Transporter's Phone 216-883-1000			
7 Transporter 2 Company Name				10 US EPA ID Number		E State Facility's ID			
9 Designated Facility Name and Site Address GENERAL ELECTRIC COMPANY 4477 EAST 49TH STREET CLEVELAND, OHIO 44125				10 US EPA ID Number 0HID004527008		F Facility's Phone 216-883-1000			
11 US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER) HAZARDOUS SUBSTANCE, LIQUID, N.O.S., ORM-E NA9188, RQ, (POLYCHLORINATED BIPHENYLS)						12 Containers No Type 001 CM		13 Total Quantity 05000	
						14 Unit P		Waste No 0621	
Additional Descriptions for Materials Listed Above TRANSFORMER WITH 1 TOROID (OIL)						K Handling Codes for Wastes Listed Above a/ 1 b/ 1 c/ 1 d/ 1			
15 Special Handling Instructions and Additional Information DIKE AND CONTAIN SPILLS, AVOID SKIN CONTACT, GE REF# 60891									
16 GENERATOR'S CERTIFICATION I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled and are in all respects in proper condition for transport by highway according to applicable international and national government regulations  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage or disposal currently available to me which minimizes the present and future threat to human health and the environment, OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford									
Printed/Typed Name Stephen M. Weers				Signature Stephen M. Weers				Date 16/3/08	
17 Transporter 1 Acknowledgement of Receipt of Materials									
Printed/Typed Name FRED. MONTONARO				Signature Fred Montonaro				Date 16/3/08	
18 Transporter 2 Acknowledgement or Receipt of Materials									
Printed/Typed Name				Signature				Date	
19 Discrepancy Indication Space									
20 Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19									
Printed/Typed Name				Signature				Date	



GE Industry  
Sales & Services

## Certificate of Disposal

General Electric Company certifies  
that all material received from

WALDORF PAPER

described on

Manifest Number 00901 Dated JUNE 30, 1988 was  
disposed of at the following **Disposal Sites:**

TRANSFORMER DISPOSED AT: ENVIROSAFE SERVICES OF IDAHO  
10 1/2 MILES, NW, GRANDVIEW, IDAHO 63624  
EPA ID NUMBER: IDDO73114654  
MANIFEST DOCUMENT NUMBER: 00913

Authorized Signature

PCB FACILITY SUPERVISOR

Title

4477 EAST 49TH STREET

Street Address

CLEVELAND

OHIO

44125

City

State

Zip



## ENVIROSAFE SERVICES OF IDAHO, INC.

May 24, 1989

General Electric Company

Cleveland Apparatus Service  
4477 East 49th Street

Cleveland, OH 44125

ATTENTION: Mr. Paul Bender

SUBJECT: CERTIFICATE OF DISPOSAL

<u>MANIFEST#</u>	<u>DATE RECEIVED</u>	<u>DATE DISPOSED</u>	<u>MATERIALS</u>
00905	07-05-88	07-05-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00913	07-21-88	07-22-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids/
00943	08-08-88	08-08-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00946	08-08-88	08-10-88 <i>posted</i>	PCB D & F Transformers
00958	08-16-88	08-16-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums
00976	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums/ Drum Solids
00977	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers

Specific material as identified by the above Manifest Document Number(s), has been received and disposed of at our landfill facility located in Grand View, Idaho in accordance with contract.

If you have any questions or need additional information feel free to contact me in the Boise office at (208) 384-1500.

Sincerely,

Ida Larson  
Accounts Receivable

RVD

A 92488

WASTE PROFILE SHEET CODE



## GENERATOR'S WASTE MATERIAL PROFILE SHEET

GENERAL DIRECTIONS: In order for us to determine whether we can lawfully, safely and environmentally transport, store, treat or dispose of your waste stream, we must ask certain information about your waste. All of the information we seek is necessary for our purposes and yours. Be complete in your answers: if your response is "none," so indicate. Answers must be in ink or typewritten. Information you provide will be maintained in strictest confidence. Please make a copy of this form for your records, returning the original to the location indicated below.

THIS FORM AND ANY SUPPLEMENTAL INFORMATION SHOULD BE RETURNED TO:

CHEMICAL WASTE MANAGEMENT INC.

4300 W. 123RD ST.

ALSIP IL. 60658

ATTN: ERIC LAUT

1. GENERATOR NAME: ST. REGIS PAPER COMPANY
2. GENERATING FACILITY NAME/ADDRESS/USEPA FACILITY I.D. NUMBER (IF ANY): ST. REGIS PAPER COMPANY 79 E. FOUNTAIN ST. BATTLE CREEK MICHIGAN 49016

3. COMPANY CONTACTS:

GENERAL JACK CRABTREE

TITLE \_\_\_\_\_

PHONE 616-963-5511

TITLE \_\_\_\_\_

PHONE \_\_\_\_\_

TECHNICAL \_\_\_\_\_

TITLE \_\_\_\_\_

PHONE \_\_\_\_\_

TITLE \_\_\_\_\_

PHONE \_\_\_\_\_

4. WASTE NAME: WASTE PCB LIQUID (2500 ppm PCB)

5. PROCESS GENERATING WASTE: TRANSFORMER OIL

6. WASTE CHARACTERISTICS:

A. PHASES/LAYERS: BILAYERED ☐ MULTILAYERED ☐ NONE ☐

B. PHYSICAL STATE AT 70°F: SOLID ☐ SEMI-SOLID ☐ LIQUID ☒  
POWDER ☐ OTHER: \_\_\_\_\_

C. SOLIDS: TOTAL (%): \_\_\_\_\_ TOTAL DISSOLVED (ppm or %): \_\_\_\_\_

D. SPECIFIC WEIGHT (AS # PER UNIT): \_\_\_\_\_

E. pH: \_\_\_\_\_ (Show the following as range of %)

AS: H<sub>2</sub>SO<sub>4</sub> \_\_\_\_\_ % H<sub>3</sub>PO<sub>4</sub> \_\_\_\_\_ %

HC1 \_\_\_\_\_ % NaOH \_\_\_\_\_ %

HF \_\_\_\_\_ % NH<sub>4</sub>OH \_\_\_\_\_ %

HNO<sub>3</sub> \_\_\_\_\_ % Ca(OH)<sub>2</sub> \_\_\_\_\_ %

OTHER: \_\_\_\_\_ % \_\_\_\_\_ %

\_\_\_\_\_ % \_\_\_\_\_ %

F. FLASH POINT: > 140°F °F (CLOSED CUP TEST ONLY)

G. VAPOR PRESSURE (in mm of Hg at 25°C): \_\_\_\_\_

H. BTU PER #: \_\_\_\_\_ ASH CONTENT \_\_\_\_\_ %

I. CHARACTERISTIC COLOR \_\_\_\_\_ DISTINCTIVE ODOR \_\_\_\_\_

J. HALOGENATED? \_\_\_\_\_ % SULFONATED? \_\_\_\_\_ %

K. ALPHA RADIATION AS pCi/l: \_\_\_\_\_

7. WASTE COMPOSITION:

A. ORGANIC COMPONENTS (WITH RANGES — INDICATE WHETHER % OR ppm)

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

(ATTACH ADDITIONAL PAGES IF NECESSARY)

DOES THIS WASTE CONTAIN ENDRIN, LINDANE, METHOXYCHLOR, TOXAPHENE, 2,4-D, 2,4,5-TP SILVEX, OR ANY OTHER ORGANIC COMPOUNDS LISTED BY USEPA AT 40 CFR 261.24? \_\_\_\_\_ IF SO, PLEASE NOTE ABOVE.

B. HEAVY METALS (WITH ppm RANGES):

TOTAL	TOTAL LEACHABLE	TOTAL	TOTAL LEACHABLE
Ag _____	_____	Hg _____	_____
As _____	_____	Ni _____	_____
Ba _____	_____	Pb _____	_____
Cd _____	_____	Se _____	_____
Cr _____	_____	Zn _____	_____
Cu _____	_____	Other (ATTACH ADDITIONAL PAGES)	

(IF YOU HAVE DETERMINED TOTAL LEACHABLES USING USEPA'S "EP TOXICITY TEST PROCEDURE" — AT 40 CFR, PART 261, APPENDIX II — SO INDICATE BY MARKING "EP" AFTER THE RESULT SHOWN ABOVE.)

C. INORGANIC COMPONENTS (WITH % RANGES):

OTHER

TOTAL CYANIDE	— %	<u>POLYCHLORINATED BIPHENYL</u>	<u>&gt; 0.0005%</u>
FREE CYANIDE	— %	_____	— %
SULFIDE AS:	— %	_____	— %
BISULFITE AS:	— %	_____	— %
SULFITE AS:	— %	_____	— %

(ATTACH ADDITIONAL PAGES IF NECESSARY)

D. DOES THIS WASTE STREAM CONTAIN BIOLOGIC MATERIALS, PATHOGENS, OR ETIOLOGICAL AGENTS? \_\_\_\_\_ IF SO, ATTACH ADDITIONAL PAGES DESCRIBING SUCH MATERIALS.

E. IS THE WASTE A PESTICIDE OR PRODUCED BY A PESTICIDE MANUFACTURING PROCESS? \_\_\_\_\_ IF SO, INDICATE WHETHER IT CONTAINS:

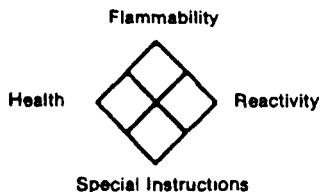
- ☐ ORGANOPHOSPHATES — CONTAINING SULFUR    ☐ YES    ☐ NO  
☐ CARBAMATES  
☐ CHLORINATED HYDROCARBONS

8. HAZARDOUS COMPONENTS AND CHARACTERISTICS

A. HAZARDOUS PROPERTIES (INSERT NUMBER CODES PER INSTRUCTIONS ON LAST PAGE)

(1) TOXICITY RATING: INHALATION \_\_\_\_\_ DERMAL \_\_\_\_\_ ORAL \_\_\_\_\_

(2) HAZARD IDENTIFICATION SYSTEM:



B. LIST ANY OTHER ACUTE OR CHRONIC HAZARDS ASSOCIATED WITH OR ALLEGED TO BE ASSOCIATED WITH HUMAN CONTACT WITH OR EXPOSURE TO THE WASTE: \_\_\_\_\_

_____
_____
_____
_____

9. REGULATORY CLASSIFICATION OF WASTE

A. IS THIS WASTE A "HAZARDOUS MATERIAL" AS DEFINED BY REGULATIONS OF THE U.S. DEPARTMENT OF TRANSPORTATION PURSUANT TO THE HAZARDOUS MATERIALS TRANSPORTATION ACT? \_\_\_\_\_  
(SEE 49 CFR 172.101 AND 173 FOR "HAZARDOUS MATERIALS" LIST AND CHARACTERISTICS.) IF SO, PLEASE ADVISE OF THE FOLLOWING:

- (1) CORRECT SHIPPING DESCRIPTION: \_\_\_\_\_  
(2) HAZARD CLASS(ES): \_\_\_\_\_  
(3) MATERIAL I.D. NO.(S) \_\_\_\_\_

B. DOES THIS WASTE CONTAIN ANY "HAZARDOUS SUBSTANCE" AS DEFINED BY REGULATIONS OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY PURSUANT TO SECTION 311 OF THE CLEAN WATER ACT? \_\_\_\_\_  
(SEE 40 CFR 117 FOR "HAZARDOUS SUBSTANCES" AND CATEGORIES.) IF SO, PLEASE ADVISE OF THE FOLLOWING:

- (1) THE NAMES OF EACH HAZARDOUS SUBSTANCE PRESENT IN THE WASTE, THE HAZARD CATEGORY (X, A, B, C OR D) AND THE APPROXIMATE CONCENTRATION OF THE SUBSTANCE BY WEIGHT IN THE WASTE:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(ATTACH ADDITIONAL PAGES IF NECESSARY)

C. IS THIS WASTE A "HAZARDOUS WASTE" AS DEFINED BY REGULATIONS OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY PURSUANT TO SECTION 3001 OF THE RESOURCE CONSERVATION AND RECOVERY ACT? NO (SEE 40 CFR, PART 261 FOR WHAT IS A "HAZARDOUS WASTE.") IF SO, STATE:

- (1) THE USEPA HAZARDOUS WASTE NUMBER(S): \_\_\_\_\_  
(2) DO YOU CLAIM TO BE A SMALL QUANTITY GENERATOR? \_\_\_\_\_ (SEE 40 CFR 261.5.)

D. IS THIS WASTE A "HAZARDOUS WASTE" AS DEFINED BY THE ENVIRONMENTAL REGULATORY AGENCY IN YOUR STATE? \_\_\_\_\_ IF SO, STATE WHY IT IS SO DEFINED AND ANY STATE HAZARDOUS WASTE CODE NUMBERS ASSIGNED: \_\_\_\_\_  
\_\_\_\_\_

10. IS THE INFORMATION PROVIDED IN SECTIONS 6-9 BASED UPON LABORATORY ANALYSIS OF THE WASTE MATERIAL? \_\_\_\_\_ IF SO, PLEASE ADVISE OF THE DATE OF THE MOST RECENT ANALYSIS: \_\_\_\_\_

11. HAVE YOU OBTAINED TOXICITY STUDIES OF THIS WASTE STREAM? \_\_\_\_\_ IF SO, PLEASE ATTACH A COPY OF THE RESULTS.

12. QUANTITY/SHIPPING REQUIREMENTS:

ANTICIPATED VOLUME IS: 3 \_\_\_\_\_

GALLONS ☐ TONS ☐ CUBIC YARDS ☐ DRUMS ☒ OTHER ☐ \_\_\_\_\_

PER: DAY ☐ WEEK ☐ MONTH ☐ YEAR ☐ ONE TIME ☒ \_\_\_\_\_

TRANSPORTATION EQUIPMENT REQUIRED: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SERVICE/SCHEDULING REQUIREMENTS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

GENERATOR'S

AUTHORIZED SIGNATORY: \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_

CONFIDENTIALITY AGREEMENT: \_\_\_\_\_,

as consideration for the Generator's release of the above information, and any other supplemental data provided, agrees to treat such information as confidential property and will not disclose such information to others except as is required by law, and in such circumstances only after first giving notice to the Generator.

By: \_\_\_\_\_  
Name

\_\_\_\_\_  
Title

## TOXICITY RATINGS

### 0 = No Toxicity

This designation is given to materials which fall into one of the following categories

(a) Materials which cause no harm under any conditions of normal use

(b) Materials which produce toxic effects on humans only under the most unusual conditions or by overwhelming dosage

### 1 = Slight Toxicity

(a) *Acute local* Materials which on single exposures lasting seconds, minutes or hours cause only slight effects on the skin or mucous membranes regardless of the extent of the exposure

(b) *Acute systemic* Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which produce only slight effects following single exposures lasting seconds, minutes, or hours, or following ingestion of a single dose, regardless of the quantity absorbed or the extent of exposure

(c) *Chronic local* Materials which on continuous or repeated exposures extending over periods of days, months, or years cause only slight and usually reversible harm to the skin or mucous membranes. The extent of exposure may be great or small

(d) *Chronic systemic* Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which produce only slightly usually reversible effects following continuous or repeated exposures extending over days, months, or years. The extent of the exposure may be great or small

In general, those substances classified as having "slight toxicity" produce changes in the human body which are readily reversible and which will disappear following termination of exposure, either with or without medical treatment

### 2 = Moderate Toxicity

(a) *Acute local* Materials which on single exposure lasting seconds, minutes, or hours cause moderate effects on the skin or mucous membranes. These effects may be the result of intense exposure for a matter of seconds or moderate exposure for a matter of hours

(b) *Acute systemic* Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which produce moderate effects following single exposures lasting seconds, minutes, or hours, or following ingestion of a single dose

(c) *Chronic local* Materials which on continuous or repeated exposures extending over periods of days, months, or years cause moderate harm to the skin or mucous membranes

(d) *Chronic systemic* Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which produce moderate effects following continuous or repeated exposures extending over periods of days, months, or years

Those substances classified as having "moderate toxicity" may produce irreversible as well as reversible changes in the human body. These changes are not of such severity as to threaten life or produce serious physical impairment

### 3 = Severe Toxicity

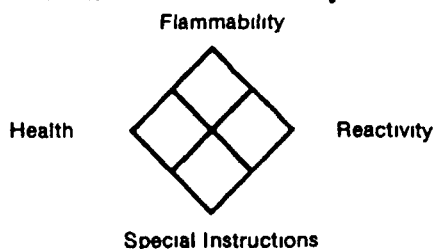
(a) *Acute local* Materials which on single exposure lasting seconds or minutes cause injury to skin or mucous membranes of sufficient severity to threaten life or to cause permanent physical impairment or disfigurement

(b) *Acute systemic* Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which can cause injury of sufficient severity to threaten life following a single exposure lasting seconds, minutes, or hours, or following ingestion of a single dose

(c) *Chronic local* Materials which on continuous or repeated exposures extending over periods of days, months, or years can cause injury to skin or mucous membranes of sufficient severity to threaten life or cause permanent impairment, disfigurement, or irreversible change

(d) *Chronic systemic* Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which can cause death or serious physical impairment following continuous or repeated exposures to small amounts extending over periods of days, months, or years

## Hazard Identification System



The above diagram identifies the "health," "flammability" and "reactivity" (instability and water reactivity) of a chemical and indicates the order of severity of each hazard by use of one of five numerical gradings, from four (4), indicating the severe hazard or extreme danger, to zero (0), indicating no special hazard. In the diamond-shaped diagram "health" hazard is identified at the left, "flammability" at the top, and "reactivity" at the right. The bottom space is primarily used to identify unusual reactivity with water. A W with a line through its center alerts fire fighting personnel to the possible hazard in use of water.

This bottom space may also be used to identify a radiation hazard by the symbol  $\gamma$ . Oxidizing chemicals are identified in the bottom space by OXY.

To supplement the spatial arrangement, NFPA No. 704M recommends the use of colored backgrounds or colored numbers to identify the hazard categories — blue for "health," red for "flammability," yellow for "reactivity."

For a detailed description of the hazard identification system used here, see "Recommended System for the Identification of the Fire Hazards of Materials, NFPA No. 704M, 1969 Edition."

The following paragraphs summarize the meanings of the numbers in each hazard category and explain what a number should tell fire fighting personnel about protecting themselves and how to fight fires where the hazard exists.

### Health

**4** A few whiffs of the gas or vapor could cause death, or the gas, vapor or liquid could be fatal on penetrating the fire fighters' normal full protective clothing which is designed for resistance to heat. For most chemicals having a Health 4 rating, the normal full protective clothing available to the average fire department will not provide adequate protection against skin contact with these materials. Only special protective clothing designed to protect against the specific hazard should be worn.

**3** Materials extremely hazardous to health, but areas may be entered with extreme care. Full protective clothing, including self-contained breathing apparatus, rubber gloves, boots and bands around legs, arms and waist should be provided. No skin surface should be exposed.

**2** Materials hazardous to health, but areas may be entered freely with self-contained breathing apparatus.

**1** Materials only slightly hazardous to health. It may be desirable to wear self-contained breathing apparatus.

**0** Materials which on exposure under fire conditions would offer no health hazard beyond that of ordinary combustible material.

### Flammability

**4** Very flammable gases, very volatile flammable liquids and materials that in the form of dusts or mists readily form explosive mixtures when dispersed in air. Shut off flow of gas or liquid and keep cooling water streams on exposed tanks or containers. Use water spray carefully in the vicinity of dusts so as not to create dust clouds.

**3** Liquids which can be ignited under almost normal temperature conditions. Water may be ineffective on these liquids because of their low flash points. Solids which form coarse dusts, solids in shredded or fibrous form that create flash fires, solids that burn rapidly, usually because they contain their own oxygen, and any material that ignites spontaneously at normal temperatures in air.

**2** Liquids which must be moderately heated before ignition will occur and solids that readily give off flammable vapors. Water spray may be used to extinguish the fire because the material can be cooled to below its flash point.

**1** Materials that must be preheated before ignition can occur. Water may cause frothing of liquids with this flammability rating number if it gets below the surface of the liquid and turns to steam. However, water spray gently applied to the surface will cause a frothing which will extinguish the fire. Most combustible solids have a flammable rating of 1.

**0** Materials that will not burn.

### Reactivity

**4** Materials which in themselves are readily capable of detonation or of explosive decomposition or of explosive reaction at normal temperatures and pressures. Includes materials which are sensitive to mechanical or localized thermal shock. If a chemical with this hazard rating is in an advanced or massive fire, the area should be evacuated.

**3** Materials which in themselves are capable of detonation or of explosive decomposition or of explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. Includes materials which are sensitive to thermal or mechanical shock at elevated temperatures and pressures or which react explosively with water without requiring heat or confinement. Fire fighting should be done from an explosion-resistant location.

**2** Materials which in themselves are normally unstable and readily undergo violent chemical change but do not detonate. Includes materials which can undergo chemical change with rapid release of energy at normal temperatures and pressures or which can undergo violent chemical change at elevated temperatures and pressures. Also includes those materials which may react violently with water or which may form potentially explosive mixtures with water or generates toxic gases, vapors or fumes when mixed with water. In advanced or massive fires, fire fighting should be done from a protected location.

**1** Materials which in themselves are normally stable but which may become unstable at elevated temperatures and pressures or which may react with water with some release of energy but not violently. Caution must be used in approaching the fire and applying water.

**0** Materials which are normally stable even under fire exposure conditions and which are not reactive with water. Normal fire fighting procedures may be used.

100 7/9 InSh-#50

To  
Distribution

Date  
July 1, 1985

From  
R. F. Cashen

Subject  
Critical Date List

Recycled Fiber Division - Battle Creek 30-271

Below is a listing of items critical to the environmental program for your location to serve as a reminder that action is required for compliance with permits or regulations.

Please send this office a copy of all reports to regulatory agencies.

If there is any question, please let me know.

JULY

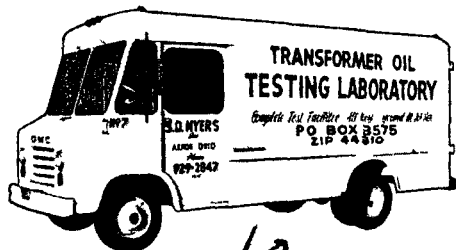
NPDES MI0029386 (Exp 2/28/88): Monthly Report

Angell Transformer Annual Report due in July

X  
DOW  
7/9

Distribution:

L. M. Spurgeon  
Paul Stofer



# transformer consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FN Date 5-5-76Customer St. Regis PaperCity Battle CreekState Mi.

### LOCATION OF TRANSFORMER

TC # 3Substation Name or Number Conveyor☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Condition	
1	42	0.02	—	—	WHD	1.54	Ch.	6000
2								
3								

### NAMEPLATE INFORMATION

Manufacturer West.Primary Volts 2400Gal. 240 ☐ Oil ☒ AskarelSerial Number YDR 4085Secondary Volts 480Impedance 5.6KVA Rating 1000Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level N Radiators ☒ Yes ☐ No Conservator Tank ☐ Yes ☒ No Top Valve 1"Temperature 31 Fans ☐ Yes ☒ No Tap Changer Comp. ☐ Yes ☒ No Bottom Valve 1"Pressure/Vacuum +1/2 H<sub>2</sub>O Cooled ☐ Yes ☒ No Bushings ☐ Top ☒ Side Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☒ Good \_\_\_\_\_ Gaskets ☐ OK \_\_\_\_\_Paint ☒ Good ☐ Fair ☐ Bad Bushings ☐ OK \_\_\_\_\_Leaks ☐ None \_\_\_\_\_ Other \_\_\_\_\_

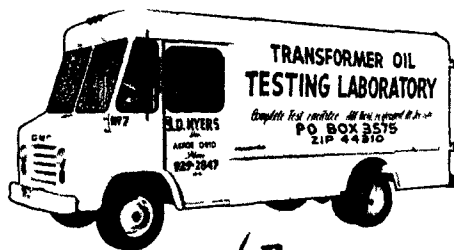
### NOTES - COMMENTS

44  
40  
42

7.00  
6.80  
20  
0.20

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ No \_\_\_\_\_Problem ReR Hoses? ☐ No \_\_\_\_\_Problem 3Ø Power? ☐ No \_\_\_\_\_De-Energize? ☐ No \_\_\_\_\_



# transformer consultants

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FN Date 5-5-76Customer St. Regis PaperCity Battle CreekState Mi.

## LOCATION OF TRANSFORMER

TC # 4Substation Name or Number Conveyer Angel Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

## REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>41</u>	<u>0.045</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1540</u>	<u>Clear</u>	<u>GOOD</u>
2								
3								

## NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 434☐ OilSerial Number 8113530Secondary Volts 480Impedance 5.63☒ AskarelKVA Rating 1000Phase/Cycle 3/60

Other \_\_\_\_\_

## ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 50Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

## VISUAL INSPECTION

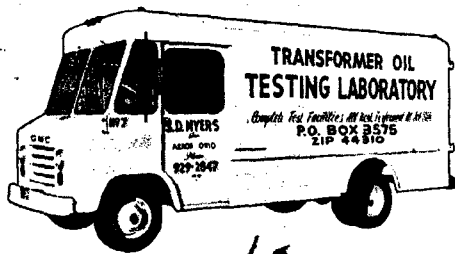
Cleanliness ☒ GoodGaskets ☒ OKPaint ☒ Good Silver☐ Fair☐ BadBushings ☒ OKLeaks ☒ None

Other \_\_\_\_\_

## NOTES — COMMENTS

## SERVICING INFORMATION — FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No



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## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FN Date 5-5-76Customer St. Regis PaperCity Battle CreekState Mi.

## LOCATION OF TRANSFORMER

TC # 5Substation Name or Number Conveyer  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

## REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>46</u>	<u>0.025</u>	<u>—</u>	<u>—</u>	<u>Wh.</u>	<u>1.540</u>	<u>Cl.</u>	<u>Good</u>
2								
3								

## NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 209☐ Oil  
☒ AskarelSerial Number 8037218Secondary Volts 208Y/120Impedance 4.9KVA Rating 300Phase/Cycle 3/60

Other \_\_\_\_\_

## ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 39Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

## VISUAL INSPECTION

Cleanliness ☐ GoodGaskets ☒ OKPaint ☐ Good Silver☐ Fair☐ BadBushings ☒ OKLeaks ☐ None

Other \_\_\_\_\_

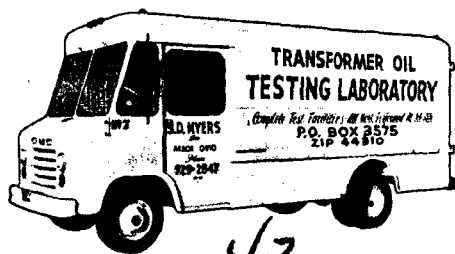
## NOTES — COMMENTS

44  
47  
46

7.75  
7.10  
—  
25  
—  
0.25

## SERVICING INFORMATION — FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No



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## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FNDate 5-5-76City Battle CreekState Mi.

### LOCATION OF TRANSFORMER

TC # 6Substation Name or Number Conveyor  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>39</u>	<u>0.05</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>OK</u>	<u>Good</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 434☐ Oil☒ AskarelSerial Number 8113527Secondary Volts 480Impedance 5.63KVA Rating 1000Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 61Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☒ GoodGaskets ☒ OKPaint ☒ Good Silver☐ Fair☐ BadBushings ☒ OKLeaks ☒ None

Other \_\_\_\_\_

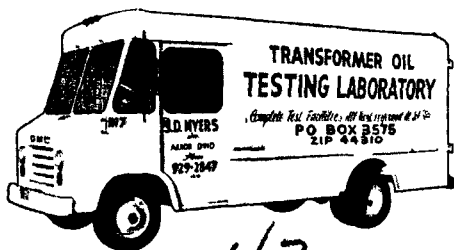
### NOTES - COMMENTS

41  
38  
39

8.25  
7.75  
50  
1  
50

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3 $\phi$  Power? ☐ NoDe-Energize? ☐ No



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## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FN Date 5-5-76City Battle Creek State Mi.

## LOCATION OF TRANSFORMER

TC # 7Substation Name or Number Power House  
Angell Pkt.☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

## REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	38	0.03	---	---	wh. 1.540	---	Clear	GOOD
2								
3								

## NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 380☐ Oil☒ AskarelSerial Number 8113528Secondary Volts 480Impedance 5.83KVA Rating 750Phase/Cycle 3/60

Other \_\_\_\_\_

## ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 43Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"

Pressure/Vacuum \_\_\_\_\_

H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

## VISUAL INSPECTION

Cleanliness ☒ GoodGaskets ☐ OKPaint ☒ Good☐ Fair☐ BadBushings ☐ OKLeaks ☐ Noneslight leak from me  
near radiator

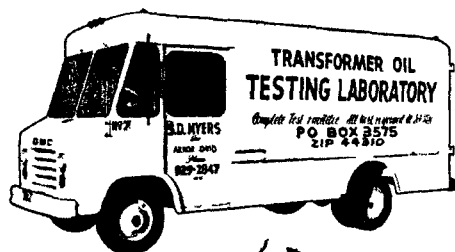
Other \_\_\_\_\_

## NOTES - COMMENTS

38  
38  
388.608.30300.30

## SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No



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## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FNDate 5-5-76City Butte CreekState Mi.

## LOCATION OF TRANSFORMER

TC # 8Substation Name or Number Coating Room Sub☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

## REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>38</u>	<u>0.03</u>	<u>—</u>	<u>—</u>	<u>whit.</u>	<u>1.540</u>	<u>clr.</u>	<u>GOOD</u>
2								
3								

## NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal 115☐ Oil☒ AskarelSerial Number P037219Secondary Volts 2084/120Impedance 4.85KVA Rating 200Phase/Cycle 3/60

Other \_\_\_\_\_

## ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1 plug

Temperature \_\_\_\_\_

Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ No

Bottom Valve \_\_\_\_\_

Pressure/Vacuum \_\_\_\_\_

H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

## VISUAL INSPECTION

Cleanliness ☐ Good dirtyGaskets ☒ OKPaint ☒ Good ☐ Fair ☐ BadBushings ☒ OKLeaks ☒ None

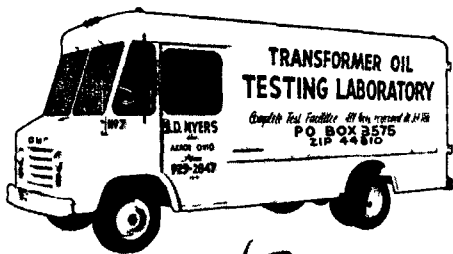
Other \_\_\_\_\_

## NOTES - COMMENTS

3640388.708.60308.30

## SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No



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P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FN Date 5-5-76City Battle Creek State mi.

### LOCATION OF TRANSFORMER

TC # 9Substation Name or Number Casting Sub☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific Gravity	Visual Conditions	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number			
1	<u>40</u>	<u>0.02</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>Clear</u>	<u>Good</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2500Gal 380 ☐ Oil ☒ AskarelSerial Number 8113529Secondary Volts 480Impedance 5.83KVA Rating 750Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level N Radiators ☒ Yes ☐ No Conservator Tank ☐ Yes ☒ No Top Valve 1"Temperature 39 Fans ☐ Yes ☒ No Tap Changer Comp. ☐ Yes ☒ No Bottom Valve 1"Pressure/Vacuum — H<sub>2</sub>O Cooled ☐ Yes ☒ No Bushings ☐ Top ☒ Side Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☐ Good dirty Gaskets ☒ OKPaint ☒ Good ☐ Fair ☐ Bad Bushings ☒ OKLeaks ☒ None Other \_\_\_\_\_

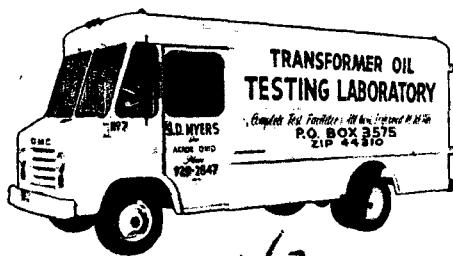
### NOTES — COMMENTS

38  
42  
40

9.10  
8.90  
20  
1  
.820

### SERVICING INFORMATION — FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No



# transformer consultants

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FNDate 5-5-76City Battle CreekState Mi.

## LOCATION OF TRANSFORMER

TC # 10Substation Name or Number Low Voltage  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

## REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>43</u>	<u>0.03</u>	<u>—</u>	<u>—</u>	<u>whit.</u>	<u>1.540</u>	<u>clr.</u>	<u>GOOD</u>
2								
3								

## NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 134☐ Oil☒ AskarelSerial Number 8037220Secondary Volts 480Impedance 4.7KVA Rating 200Phase/Cycle 3/60

Other \_\_\_\_\_

## ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature —Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

## VISUAL INSPECTION

Cleanliness ☒ GoodGaskets ☐ OKPaint ☒ Good☐ Fair☐ BadBushings ☐ OKLeaks ☒ None

Other \_\_\_\_\_

## NOTES - COMMENTS

40  
45  
43
9.40  
9.80  
30  
1  
9.30

## SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3 $\phi$  Power? ☐ NoDe-Energize? ☐ No



Industry Services Engineering  
General Electric Company  
678 Front Street, NW, Grand Rapids, MI 49504  
616 458-4129/2319

JULY 22, 1988

Waldorf Corporation  
177 Angell Street  
Battle Creek, Michigan 49016

Attention: Mr. Steve Weers

Reference: PCB Transformer Disposal

Quotation No. 389E00207

Gentlemen:

In response to your request, the General Electric Company, Industrial Sales and Services Division, Grand Rapids Office, is pleased to submit our proposal to provide services at your Battle Creek facility as follows:

- A. Remove and dispose of one (1) 25 KVA transformer.
- B. Remove and dispose of three (3) 100 KVA transformers.

ISSD will provide technical supervision, craft labor, tools, and equipment required to complete the removal work.

A qualified field engineer will supervise technical and contractor personnel for the overall project.

A PCB certified supervisor will direct the actual PCB material handling and disposal.

WORKSCOPE:

Remove and dispose of the following transformers:

- A. 25 KVA - 30 gallons of oil.
- B. 100 KVA - 50 gallons of oil each.

Work on the transformers will include the following:

1. Drain the transformers.
2. Remove the transformers.
3. Decommission and dispose of PCB liquid and transformer carcass.
4. Dispose of any other waste we generate while on-site pertaining to this portion of the work.
5. Provide disposal certificates and signed manifests to show proper disposal after completion of the job.

---

CUSTOMER RESPONSIBILITIES:

1. The customer shall provide free and safe access to the job site in order to perform this work.
2. All scheduling and switching shall be the responsibility of the customer. The transformer must be out of service to perform this work.
3. It shall be the customer's responsibility to provide an uninterrupted flow of work and/or access to the equipment. If delays are incurred, their associated costs will be billed as extras.
4. The customer must provide reasonable, mutually agreeable access to each equipment and work area. This includes removal and restoration of any and all obstructions in order to provide a clear path for rigging out the transformer between the present location and the closest convenient place to locate a truck.
5. Provide the required EPA I.D. number and PCB item out of service date.

PRICE, PAYMENT AND ESCALATION:

For the afore-mentioned scope of services we are pleased to quote you  
.....\$ 8,810.00 Lot Net.

Our terms of payment are net due upon receipt of invoice.

Title shall pass on a pro-rata basis as work is completed.

The prices quoted herein are firm for a period of thirty (30) days after which they shall be subject to adjustment.

The price quoted in this proposal is contingent upon all work being performed on a straight time basis, and all work being completed by the end of 1988.

---

BASIS OF PROPOSAL:

1. The terms and conditions of the attached GEISS Form 487 (CS), and the attached PCB clauses, GEISS Form 487 (PCB), shall apply unless specifically stated otherwise in this proposal.
2. These units are presently owned by Waldorf Corporation and title cannot be transferred to a "middle agent" or "distributor", etc. for resale to another ultimate user.
3. Title to the toxic waste will transfer on a per event basis at the beginning of on-site work on each particular piece of equipment .

This document contains proprietary information and is submitted upon the expressed condition that the information contained herein will not be used directly or indirectly in any way detrimental to the interest of the General Electric Company.

We thank you for allowing us to be of service, and hope to be favored with your order. I am sure you will find our PCB terms to be the best available in the industry. Should any further questions arise, please do not hesitate to contact me at this office.

Sincerely;



Warren J Thaler  
Area Engineer  
ISSD - Industrial.



# GE Industry Sales & Services

## Conditions of Sale for Services

The sale of any service and incidental goods ordered by the Customer is expressly conditioned upon the terms and conditions contained or referred to herein. Any additional or different terms and conditions set forth in the Customer's purchase order or similar communication are objected to and will not be binding upon GE Industry Sales & Services (herein called GE) unless specifically assented to in writing by GE's authorized representative. Authorization by the Customer, whether written or oral, to furnish services and incidental goods will constitute acceptance of these terms and conditions.

### 1. SERVICE DEFINITIONS

- a. **COMPLETE INSTALLATION/MAINTENANCE/CONSTRUCTION** is any combination of planning, management, labor, tools and incidental goods to move, install, assemble, modify, repair, modernize, start-up and/or maintain equipment.
- b. **FIELD ENGINEERING** is engineering and technical guidance, advice and counsel based upon GE's current engineering, manufacturing, installation and operating practices, as related to work performed by others.
- c. **JOB MANAGEMENT** is any combination of planning, scheduling, monitoring, selection of crews, as specified in the contract documents, but does not include responsibility for supervision of labor or for the quality or acts of craft labor.
- d. **TRAINING** is an instructional course prepared and provided by personnel proficient in the subject matter.
- e. **ENGINEERING STUDY/INSPECTION/TEST** is system design and analysis of equipment or systems by competent, experienced personnel using special techniques, instruments or devices with the objective of reporting opinions or recommendations relating to the current condition and future serviceability of the equipment or system.
- f. **PCB SERVICE** is any combination of relocation, testing, containment, retrofit/refill or retrofit/replacement of PCB material.

### 2. WARRANTY

- a. GE warrants to the Customer that goods and services sold will be free from defects in material and workmanship and will conform to any mutually agreed upon specifications. If any failure to meet this warranty appears within one year from the date of shipment of the goods or completion of the services, on the condition that GE be promptly notified in writing thereof, GE will correct any such failure by reperforming any defective portion of the services furnished and supplying conforming goods. If the contract covers complete installation, maintenance or construction, GE will correct the failure by reperforming any defective service, and either repairing or replacing (at its option) any defective goods furnished and any damage to the equipment upon which the service was performed resulting from defective service. If reperformance is not practicable, GE will furnish without charge services in an amount essentially equal to those which, in GE's sole judgement, would have been required for reperformance. If the contract covers job management, GE's sole obligation will be to replace the job manager for the balance of the job. If the contract covers training, GE's sole obligation will be to replace the assigned instructor and reperform the training.
- b. The preceding paragraph a. sets forth the exclusive remedy for all claims based on failure of, or defect in, goods or services sold hereunder, whether the failure or defect arises before or during the warranty period, and whether a claim, however instituted, is based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise. The foregoing warranty is exclusive and is in lieu of all other warranties whether written, oral, implied or statutory. **AS TO ALL GOODS SOLD, NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PARTICULAR PURPOSE SHALL APPLY.**

### 3. PATENTS

- a. GE warrants that the goods sold hereunder, and any part thereof, shall be delivered free of any rightful claim of any third party for infringement of any United States patent. If notified promptly in writing and given authority, information and assistance, GE shall defend, or may settle, at its expense, any suit or proceeding against the Customer based on a claimed infringement which would result in a breach of this warranty, and GE shall pay all damages and costs awarded therein against the Customer due to such breach. In case any goods are in such suit held to constitute such an infringement and the use for the purpose intended of said goods is enjoined, GE shall, at its expense and option, either procure for the Customer the right to continue using said goods, or replace same with noninfringing goods, or modify same so they become noninfringing, or remove the goods and refund the purchase price (less reasonable depreciation for any period of use) and any transportation costs separately paid by the Customer. The foregoing states the entire liability of GE for patent infringement.
- b. The preceding paragraph a. shall not apply to any goods specified by the Customer and not of GE manufacture, or manufactured to the Customer's design, or to the use of any goods furnished hereunder in conjunction with any other goods in a combination not furnished by GE as a part of the transaction. As to any such goods, or use in such combination, GE assumes no liability whatsoever for patent infringement and the Customer will hold GE harmless against any infringement claim arising therefrom.

### 4. EXCUSABLE DELAYS

- a. GE shall not be liable for delay due to: (1) causes beyond its reasonable control, or (2) acts of God, acts of the Customer, prerequisite work by others, acts of civil or military authority, government priorities, fires, strikes or other labor disturbances, floods, epidemics, war, riot, delays in transportation or car shortages, or (3) inability to obtain or delay in obtaining, due to causes beyond its reasonable control, suitable labor, materials, or facilities. In the event of any such delay, the time of performance shall be extended for a period equal to the time lost by reason of the delay.
- b. In the event GE is delayed by acts of the Customer or by prerequisite work by other contractors or suppliers of the Customer, GE shall be entitled to an equitable price adjustment in addition to extension of the time of performance.

### 5. SALES AND SIMILAR TAXES

In addition to the price specified herein, the Customer shall pay, or reimburse GE for, the gross amount of any present or future sales, use, excise, value-added or other similar tax applicable to the price, sale or furnishing of any services or goods hereunder, or to their use by GE or the Customer, or the Customer shall provide GE with evidence of exemption acceptable to the taxing authorities.

### 6. PAYMENTS AND FINANCIAL CONDITION

- a. Pro rata payments shall become due as shipments are made or as work is completed. If GE consents to delayed shipments of goods, payment shall become due on the date when GE is prepared to make shipment. All payments shall be made without set-off for claims arising out of other sales by GE.
- b. If the financial condition of the Customer at any time does not, in the judgment of GE, justify continued performance on the terms of payment previously agreed upon, GE may require full or partial payment in advance or shall be entitled to terminate the contract and receive



## GE Industry Sales & Services

### Supplemental Conditions for PCB Services

For PCB Services, the conditions contained herein shall supplement the CONDITIONS OF SALE, GEISS Form 487(CS):

#### 1. DEFINITIONS

a. "PCB Service" shall mean the service described in the attached quotation or contract to the extent that such services involve PCB Material. PCB Service may include removal, disposal, repair, testing, clean-up, replacement of insulating fluids and all other activities (such as transportation, storage, etc.) incident thereto.

b. "PCB Material" shall mean the equipment or other material containing or contaminated with polychlorinated biphenyl (PCB) identified in the attached quotation or contract as well as all the parts and the contents thereof and all material used in the performance of the PCB Service which comes into contact with PCB Material.

c. "Release" shall mean with respect to the PCB Material the intentional or unintentional spilling, migration or escape of the PCB Material or any part thereof either alone or in connection with any other substance, including, but not limited to, water, air and smoke.

#### 2. PCB MATERIAL TERMS

a. GE represents that it has knowledge of the requirements associated with the use, collection, handling, storage, transportation and disposal of the PCB Material; that it has experience in such use, collection, handling, storage, transportation and disposal; and that it shall have instructed its personnel, subcontractors and agents in the proper procedures to be used in the performance of PCB Service.

b. GE will perform the PCB Service in compliance with any and all federal, state and local laws and regulations pertaining thereto, including but not limited to, the regulations contained in 40 CFR Part 761; and will have obtained all licenses and permits required by law to engage in the activities necessary to perform the PCB Service.

c. GE warrants that storage, transportation and disposal of the PCB Material will be done by means of facilities and vehicles which are fully licensed by appropriate federal, state and local authorities, as required.

d. The Customer warrants that it has full legal title to, or the power and right to transfer title to, the PCB Material (including, without limitation, all licenses or permits required by law or regulation to be obtained by the owner and/or generator of the material), and that the Customer has no knowledge that the PCB Material is not as otherwise described in the contract documents.

e. If the Customer provides containers for transportation and/or storage of the PCB Materials, such containers shall comply with all applicable law. GE's sole remedy for the Customer's default under this paragraph is, that upon discovery of one or more non-complying containers, GE may provide complying containers and charge the Customer for the containers, the labor needed to transfer the PCB Material into complying containers, and any additional disposal charges.

f. To the extent that any PCB Material is to be disposed of, GE will take title to such PCB Material when it is loaded on a transport vehicle provided by GE or when the PCB Material is delivered to a GE facility, whichever is earlier. If GE and Customer have agreed in writing that title will pass at an earlier time, such agreement will govern. GE takes title to the PCB Material only for the purpose of disposal and shall not

use or transfer title to the PCB Material for any other purpose. In the event that the PCB Material is later determined to be of a nature or character different from that described in the contract documents, title shall pass back to the Customer and, unless otherwise agreed, GE may return the PCB material to the Customer at the Customer's expense and the Customer shall be liable for and shall indemnify GE against all losses, damages and claims caused by the PCB material including any damage to the environment, except to the extent that such losses, damages or claims are the result of the negligent or other illegal act or omission of GE or its subcontractors.

g. Unless the Customer has otherwise advised GE in writing before commencement of the PCB Service, the Customer represents that any of the PCB material which is to be disposed of has not been in storage for disposal or out of service prior to the start of work. The Customer shall indemnify GE against all loss, cost and liability, including fines, penalties, attorneys' fees and costs of defense and extra costs of disposal, on account of any failure of GE to cause the disposal of any PCB material prior to one year after the PCB Material first went into storage for disposal because of reliance on the representation described in the preceding sentence or on any false or mistaken representation by the Customer concerning the date when the PCB material first went into storage for disposal.

h. Unless otherwise agreed or required by law, GE will not test the PCB Material to determine the level of PCB concentration without the prior consent of the Customer. Unless there is a determination of PCB concentration made or accepted by GE:

- (1) GE may charge the disposal price for PCB Material of the highest concentration;
- (2) GE may use special procedures to prevent contamination of its facilities and equipment and make an appropriate extra charge for such service; and
- (3) GE shall not be liable to the Customer for any level of PCB concentration revealed by a subsequent test.

i. The following rules apply in the case of any replacement of insulating fluid for the purpose of reclassifying any equipment under 40CFR 761.30(a)(2)(v), (b)(2)(vii) or (h)(2)(v):

- (1) Unless otherwise agreed, the Customer shall be responsible for operating the equipment as required by regulation or otherwise during a 90-day in-service period.
- (2) GE will test to determine the level of PCB concentration prior to fluid replacement and will make a compliance retest after the 90-day in-service period.
- (3) GE guarantees that the PCB concentration shown by a compliance retest will not exceed the concentration level stated in the contract documents, or, if no level is stated, then, that the PCB concentration will be such that the equipment will be reclassified to the next lower class. The Customer's sole remedy for a breach of this guarantee is that GE will reperform the service to achieve the results guaranteed. GE shall not be responsible for any increase in PCB concentration shown by testing after a successful compliance retest.

j. Subject to the provisions of paragraph 2.k. below, in the event of the failure by GE, its employees, agents and subcontractors to comply with any applicable federal, state or municipal law, regulation or rule which directly or indirectly regulates or affects the use, collection, handling, storage, transportation or disposal of the PCB Material; or the release of all or any part of the PCB material prior to the completion of the

(Continued on reverse)

CUST WALDORF CORPORATION  
SUB NAME

CITY BATTLE CREEK MI  
UNIT # WEST

OTHER

ID # 36125000  
LOCATION

DATE PRINTED 4/16/88

### NAMEPLATE DATA

MFG	EQUIP TYPE	TRANSFORMER
DATE MFG	TRANS CLASS	
S/N	IMPEDANCE	
KVA	PHASE/CYCLE	
PRI	LIQUID TYPE	OIL
SEC	GAL LIQUID	30

### ADDITIONAL EQUIPMENT

RADIATORS	CONSERVATORS
FANS	LTC COMP
H <sub>2</sub> O COOLED	BUSHING LOC
OIL PUMPS	HOSE LENGTH
TOP FPV	DE-ENERGIZED
BOTTOM FPV	POWER V/A
OTHER ACCESS	

### VISUAL INSPECTION

PAINT CONDITION      LEAKS

### FIELD SERVICE

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242	1254	1260	OTHER	TOTAL CONTENT
8/30/88	AROCLOR	AROCLOR	AROCLOR		ND
COLOR LABEL GREEN CLASS NON-PCB					

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP	GR	VISUAL	SEDIMENT
8/30/88	*****											

NOT TESTED PER CUSTOMER REQUEST

### GAS IN OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	PROPANE	BUTANE	PENTANE	HEXANE	SEPTANE	OCTANE	NONANE	TOTAL
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THIS TEST IS AN INVALUABLE TOOL USED TO EVALUATE THE OPERATION OF TRANSFORMERS  
SERVICE AGED TRANSFORMERS FOR MAXIMUM RESULTS

CUST. WALDORF CORPORATION  
SUB. NAME

CITY BATTLE CREEK MI  
UNIT # CENTER WEST OTHER

ID # 36125000 DATE PRINTED 4/16/88  
LOCATION

**NAMEPLATE DATA**

MFG.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	
S/N	IMPEDANCE	
KVA	PHASE/CYCLE	
PRI	LIQUID TYPE	OIL
SEC	GAL LIQUID	50

**ADDITIONAL EQUIPMENT**

RADIATORS	CONSERVATORS
FANS	LTC COMP
H <sub>2</sub> O COOLED	BUSHING LOC
OIL PUMPS	HOSE LENGTH
TOP FPV	DE-ENERGIZED
BOTTOM FPV	POWER V/A
OTHER ACCESS	

**VISUAL INSPECTION**

PAINT CONDITION      LEAKS

**FIELD SERVICE**

**PCB CONTENT / EXPRESSED IN PPM**

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
8/30/88					ND

COLOR LABEL GREEN CLASS NON-PCB

**LIQUID SCREEN TEST DATA**

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
8/30/88	*****										

NOT TESTED PER CUSTOMER REQUEST

**GAS IN OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM**

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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CUST. WALDORE CORPORATION  
SUB. NAME

CITY BATTLE CREEK MI  
UNIT # CENTER EAST OTHER

ID # 36125000 DATE PRINTED 4/16/88  
LOCATION

**NAMEPLATE DATA**

MFG.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	
S/N	IMPEDANCE	
KVA	PHASE/CYCLE	
PRI	LIQUID TYPE	OIL
SEC	GAL LIQUID	50

**ADDITIONAL EQUIPMENT**

RADIATORS	CONSERVATORS
FANS	LTC COMP
H <sub>2</sub> O COOLED	BUSHING LOC
OIL PUMPS	HOSE LENGTH
TOP FPV	DE-ENERGIZED
BOTTOM FPV	POWER V/A
OTHER ACCESS	

**VISUAL INSPECTION**

PAINT CONDITION      LEAKS

**FIELD SERVICE**

**PCB CONTENT / EXPRESSED IN PPM**

DATE OF SERVICE	1242	1254	1260	OTHER	TOTAL CONTENT
9/30/88	AROCLOR	AROCLOR	AROCLOR		ND

COLOR LABEL GREEN CLASS NON-PCB

**LIQUID SCREEN TEST DATA**

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
3/30/88	*****										

NOT TESTED PER CUSTOMER REQUEST

**GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM**

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	OTHER	TOTAL
------	---------	----------	--------	----------	---------	-----------------	----------------	--------	----------	-----------	-------	-------

THIS TEST IS AN INVALUABLE TOOL FOR THE EVALUATION OF THE OPERATING CONDITION OF THE TRANSFORMER. IT IS A SERVICE-AGE TRANSFORMER. SEE WAX-11-1 FOR DETAILS.

CUST WALDORF CORPORATION  
SUB NAME

CITY BATTLE CREEK MI  
UNIT # EAST

OTHER

ID # 36125000

DATE PRINTED

4/16/88

LOCATION

### NAMEPLATE DATA

MFG.	EQUIP TYPE	TRANSFORMER
DATE MFG	TRANS CLASS	
S/N	IMPEDANCE	
KVA	PHASE/CYCLE	
PRI	LIQUID TYPE	OIL
SEC	GAL LIQUID	50

### ADDITIONAL EQUIPMENT

RADIATORS	CONSERVATORS
FANS	LTC COMP
H <sub>2</sub> O COOLED	BUSHING LOC
OIL PUMPS	HOSE LENGTH
TOP FPV	DE-ENERGIZED
BOTTOM FPV	POWER V/A
OTHER ACCESS	

### VISUAL INSPECTION

PAINT CONDITION

LEAKS

### FIELD SERVICE

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
8/30/88					ND

COLOR LABEL GREEN CLASS NON-PCB

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
8/30/88	*****										

NOT TESTED PER CUSTOMER REQUEST

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL H <sub>2</sub>
------	---------	----------	--------	----------	---------	-----------------	----------------	--------	----------	-----------	-------------------	----------------------

THIS TEST IS AN INVALUABLE TOOL USED TO EVALUATE THE DEGRADATION OF THE INSULATING OIL IN SERVICE-AGED TRANSFORMERS. FOR TAX CATE 11-5011



**GE Industry  
Sales & Services**

Cleveland Apparatus Service  
General Electric Company  
4477 E. 49th St., Cleveland, OH 44125  
(216) 883-1000

WALDORF PAPER  
177 ANGELL STREET  
BATTLECREEK, MICHIGAN 49016  
ATTN: STEVE WEERS

Subject: Certificate of Compliance

Gentlemen:

The General Electric Co., EPA ID # OHD004527008, the  
material received from:

Manifest Number: 00901

WALDORF PAPER  
177 ANGELL STREET  
BATTLECREEK, MICHIGAN 49016

LIQUIDS on 06-30-88

Were Disposed of at:  
CLEAN INCINERATION SERVICES, 100 WOODLAWN AVE.  
PITTSFIELD, MASSACHUSETTS 02108  
EPA IDENTIFICATION NUMBER: MAD002094093  
STATE MANIFEST NUMBER: MA-C255909  
MANIFEST DOCUMENT NUMBER: 00923

Thank you for the opportunity to be of service. If you have  
any questions please call us at (216)883-1000 ext. 246.

Yours very truly,

Paul T. Bender  
PCB Facility Supervisor  
Cleveland Service Center

GENERAL ELECTRIC COMPANY  
ENVIRONMENTAL PROGRAMS  
100 Woodlawn Avenue  
Pittsfield, Ma. 01201

PCB LIQUID  
DISPOSAL CERTIFICATE

---

General Electric Company  
4477 East 49th Street  
Cleveland, Oh. 44125

During the month of August 1988, the General Electric Large Transformer Operation incinerated 3774 gallons of PCB contaminated liquids received on July 27, 1988 on Manifest MAC255909.

The incinerator disposal was performed in accordance with all local, state and federal laws and regulations in effect as of that date.

The incinerator is operated under the Massachusetts Departments of Quality Engineering Certification # 400149 and a United States Environmental Protection Agency - Region I approval dated March 4, 1982.

General Electric Company  
Large Transformer Operations

By: Thomas W. Armstrong  
Thomas W. Armstrong  
Manager - Environmental Operations

Date: August 26, 1988



**GE Industry  
Sales & Services**

Cleveland Apparatus Service  
General Electric Company  
4477 E 49th St., Cleveland, OH 44125

Dial Comm.

WALDORF PAPER  
177 ANGELL STREET  
BATTLECREEK, MICHIGAN 49016  
ATTN: STEVE WEERS

Gentlemen:

Enclosed please find your certificates of disposal for the PCB materials received by us on manifest document number 00901 dated 06-30-88. Thank you for the opportunity to be of service. If you have any questions please call us at (216)883-1000 ext. 246.

Yours very truly,

Paul T. Bender  
PCB Facility Supervisor



GE Industry  
Sales & Services

## Certificate of Disposal

General Electric Company certifies  
that all material received from

WALDORF PAPER

described on

Manifest Number 00901 Dated JUNE 30, 1988 was  
disposed of at the following **Disposal Sites:**

TRANSFORMER DISPOSED AT: ENVIROSAFE SERVICES OF IDAHO  
10 1/2 MILES, NW, GRANDVIEW, IDAHO 63624  
EPA ID NUMBER: ID0073114654  
MANIFEST DOCUMENT NUMBER: 00913

Authorized Signature

PCB FACILITY SUPERVISOR

Title

4477 EAST 49TH STREET

Street Address

CLEVELAND

OHIO

44125

City

State

Zip



## ENVIROSAFE SERVICES OF IDAHO, INC.

May 24, 1989

General Electric Company

Cleveland Apparatus Service

4477 East 49th Street

Cleveland, OH 44125

ATTENTION: Mr. Paul Bender

SUBJECT: CERTIFICATE OF DISPOSAL

<u>MANIFEST#</u>	<u>DATE RECEIVED</u>	<u>DATE DISPOSED</u>	<u>MATERIALS</u>
00905	07-05-88	07-05-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00913	07-21-88	07-22-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00943	08-08-88	08-08-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00946	08-08-88	08-10-88 <i>posted</i>	PCB D & F Transformers
00958	08-16-88	08-16-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums
00976	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums/ Drum Solids
00977	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers

Specific material as identified by the above Manifest Document Number(s), has been received and disposed of at our landfill facility located in Grand View, Idaho in accordance with contract.

If you have any questions or need additional information feel free to contact me in the Boise office at (208) 384-1500.

Sincerely,

*Ida Larson*

Ida Larson  
Accounts Receivable



**GE Industry  
Sales & Services**

---

*Toledo Apparatus Service Center  
General Electric Company  
405 Dearborn Ave., Toledo, OH 43605*

Mr. Steve Weers  
Waldorf Paper  
177 Angel Street  
Battle Creek, MI 49016

August 29, 1989

RE: Oil Test Results

Steve,

Attached, please find the lab reports on the samples we recently took from your PCB transformers. The results are less than satisfactory. In fact, the actual dielectric strength is very low on every unit.

If these were 10C mineral oil, we could filter the oil to bring the dielectric up. Unfortunately, the nearest filter press dedicated to PCB work is in our Cincinnati Service Center. We could make arrangements to bring the unit to your facility and filter the units on an off day.

The biggest question you need to face is your long term goals with them. Are they in satisfactory condition to run for several more years, or should you be thinking of replacement.

If I can answer any questions or assist you in any way, please call our toll free number, (800) 221-7350.

Very truly yours,

Ron Achor, Manager  
Toledo Service Center

cc W. Thayler  
52516

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#:SAMPLE #1 SUB #3

P.O. NUMBER :097-52516-01  
JOB NUMBER :65847

ATTN:MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
TEST DATE.....  
TEST ASTM # 08/28/89 SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877			
STRENGTH KV	D-877	12 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.542	1.40 TO 1.62
WATER CONTENT	D-1533	38 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.611	-----
*VISCOSITY	D-445	55	50-60 SUS
*RESISTIVITY	D-1169	.8X10 <sup>9</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS:THIS SAMPLE FALLS WAY BELOW THE RECOMMEND LIMITS

TESTED BY: *Arkie Salkil*  
ARKIE SALKIL  
LAB SPECIALIST

APPROVED BY:

*John Engstrom*  
JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#:SAMPLE #2 SUB #2

P.O. NUMBER :097-52515-01  
JOB NUMBER 165847

ATTN:MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST ASTM # 08/28/89 SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877			
STRENGTH KV	D-877	11 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.546	1.40 TO 1.62
WATER CONTENT	D-1533	34 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.513	-----
*VISCOSITY	D-445	53	50-60 SUS
*RESISTIVITY	D-1159	.7X10 <sup>4</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS:THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #3 WET END  
LIGHTING SUB

P.O. NUMBER : 097-52516-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	13 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.544	1.40 TO 1.62
WATER CONTENT	D-1533	31 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	53	50-60 SUS
*RESISTIVITY	D-1169	.8X7 <sup>8</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #4 SUB #1

P.O. NUMBER : 097-32516-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	9 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.545	1.40 TO 1.62
WATER CONTENT	D-1533	41 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	52	50-60 SUS
*RESISTIVITY	D-1169	.6X10 <sup>4</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #3  
POWERHOUSE SUB

P.O. NUMBER : 097-52516-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*

.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	11 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.544	1.40 TO 1.62
WATER CONTENT	D-1533	38 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	53	50-60 SUS
*RESISTIVITY	D-1169	.7X810	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

ARKIE SALKIL  
LAB SPECIALIST

APPROVED BY:

*John Engstrom*

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #6 DRY END  
LIGHTING SUB

P.O. NUMBER 1097-52516-01  
JOB NUMBER 165847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST            ASTM #            08/28/89            SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	10 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.544	1.40 TO 1.62
WATER CONTENT	D-1533	35 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.612	-----
*VISCOSITY	D-445	54	50-60 SUS
*RESISTIVITY	D-1169	.7X10 <sup>3</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY: *Arkio Salkil*  
ARKIE SALKIL  
LAB SPECIALIST

APPROVED BY: *John Engstrom*  
JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #7 DRY END  
POWER PANEL SUB

P.O. NUMBER : 097-52516-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	11 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.545	1.40 TO 1.62
WATER CONTENT	D-1533	34 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	52	50-60 SUS
*RESISTIVITY	D-1169	.7X10 <sup>6</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkio Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS



GENERAL ELECTRIC COMPANY  
POWER DISTRIBUTION DIVISION      INSULATION LABORATORY  
PITTSFIELD, MASS.

Comprehensive \_\_\_\_\_ Oil X Pyranol Testing Service Report      Sheet 1 of 2

Customer Michigan Carton Company      Report No. T65-124  
Battle Creek, Michigan      Date 5/12/65  
 Requisition No. 390-68828, rec'd. 4/20/65      Tested By E. W. Walker  
 Date Samples Received 5/10/65, Lot #4712      Approved By S.W. Kernaghan  
All G. E. Units

Serial Number	8037219	8037220	8113527	8113528	8113529
Dielectric Strength, KV	42	32	37	35	38
Color, APHA <del>ASTM</del>	125	125	125	125	125
Acidity, mg. KOH/g	.02	.02	.04	.03	.03
Visual Condition	Clear, very slight sediment	Clear, slight sediment	Clear, slight sediment	Clear, very slight sediment	Clear, very slight sediment
Viscosity, SUS 37.8°C	52"	53"	53"	53"	53"
Specific Gravity 15.5/15.5°C	1.558	1.557	1.557	1.557	1.558
Water Content PPM	12	10	43	21	35
Refractive Index 25°C.	1.6140	1.6138	1.6142	1.6141	1.6142
Scavenger Content % *	.120	.118	.082	.104	.105
Resistivity ohm-cm, 100°C	34x10 <sup>9</sup>	37x10 <sup>9</sup>	18x10 <sup>9</sup>	22x10 <sup>9</sup>	29x10 <sup>9</sup>
Free Chlorides PPM	.1	.1-	.1-	.1-	.1-
Pour Point °C					
Interfacial Tension, 25°C	LIGHTING #3 SUB	LOW LIFT PUMP STA. #2 SUB	#2 TRANS	POWER #1 SUB	POWER #3 SUB
Pwr. Factor %, 25°C					
100°C					
Corrosive Sulfur ASTM D1275	*Scavenger is of the D50P18 Variety				
Organic Contamination Qualitative	Slight	Slight	Slight	Slight	Slight
	1325122	1320100	1359100	1341122	1340122

Based on the samples and information submitted, the following recommendations are made.

**Customer: (2)**

79 E. Fountain St.  
Battle Creek, Mich.  
Att. Mr. H. Decker  
RM Lesperance  
43-240(Req. enc.)  
HC Kelly 34-346  
SW Kernaghan 8-510  
EW Walker 8-403(2)  
File

These Pyranols are in suitable condition for continued use but the Pyranol in units #8113527 and 8113530 are somewhat higher in acid content and lower in scavenger content than the others.

These units should be re-sampled and tested after six months, and if the acidity continues to rise and/or the scavenger content is further depleted, corrective action should be taken.

GENERAL ELECTRIC COMPANY  
POWER DISTRIBUTION DIVISION      INSULATION LABORATORY  
PITTSFIELD, MASS.

Sheet 2 of 2

\_\_\_\_\_ Oil      X   Pyranol Testing Service Report

Customer Michigan Carton Company  
Battle Creek, Mich.

Report No. T65-124

Requisition No. \_\_\_\_\_

Date \_\_\_\_\_

Date Samples Received \_\_\_\_\_

Tested By \_\_\_\_\_

Approved By \_\_\_\_\_

Serial Number	811130	8037218			
Dielectric Strength, KV	35	39			
Color, APHA <del>ASTM</del>	125	90			
Acidity, mg. KOH/g	.04	.02			
Visual Condition	Clear, very slight sediment	Clear, very slight sediment			
Viscosity, SUS 37.8°C	53"	52"			
Specific Gravity 15.5/15.5°C	1.560	1.557			
Water Content PPM	14	19			
Refractive Index 25°C.	1.6143	1.6141			
Scavenger Content % *	.078	.100			
Resistivity ohm-cm, 100°C	18x10 <sup>9</sup>	42x10 <sup>9</sup>			
Free Chlorides PPM	.1-	.1-			
Pour Point °C					
Interfacial Tension, 25°C	#1 TRANS #2 SUB.	LIGHTING #2 SUB			
Pwr. Factor %, 25°C					
100°C					
Corrosive Sulfur ASTM D1275	slight	slight			
Organic Contamination Qualitative					
	1347100	1340100			
Based on the samples and information submitted, the following recommendations are made.					

EXHIBIT A  
TO  
HAZARDOUS WASTE  
AGREEMENT BETWEEN  
CHEMICAL WASTE MANAGEMENT, INC.  
AND  
ST. REGIS PAPER COMPANY  
DATED JULY 1, 1982

SUPPLEMENTAL INFORMATION DOCUMENT: NUMBER 3-055-83

This Document supplements, and is part of, that certain "Hazardous Waste Transportation and/or Disposal Agreement" (hereinafter "the Agreement"), entered into by and between St. Regis Paper Company (hereinafter "the Generator"), and Chemical Waste Management, Inc. (hereinafter "CWM") on July 1, 1982. The provisions of this Document shall be incorporated into the Agreement.

1. DESCRIPTION AND QUANTITY OF WASTE PRODUCTS. The "Waste Products", to which the Agreement refers, are as described in the "Generator's Waste Material Profile Sheet," Code Designation RVD A92488, attached hereto and made part hereof.

Containers are to be provided by Generator according to the following specifications:

55 gallon steel drums in conformance with DOT requirements for subject matter, drums must be in good condition, properly labeled.

2. TENDER OF WASTE PRODUCTS. Generator, or Generator's transporter if CWM is not the transporter, shall tender delivery of the above Waste Products to CWM at the following place and time and in the following manner:

(a) Quantity of Waste Products to be Tendered Over Term.

1) Estimated Annual.

(3) three 55 gallon drums

2) Estimated Maximum/Minimum Per Tender.

N/A

(b) Place. (Generator Facility if CWM is transporter; CWM Facility if CWM is not transporter).

St. Regis Paper Company  
79 E. Fountain Street  
Battle Creek, MI 49016

(c) Time and Manner. As scheduled by Generator and CWM. If CWM is transporter, Generator shall be responsible for loading CWM's trucks.  
as scheduled

3. LOADING AND TRANSPORTATION. The Waste Products are to be loaded (or stowed) on vehicles (or vessels) by Generator, and transported to the Storage Facility Disposal Facility (circle one) by CWM. If the Waste Products are first transported

to a Storage Facility, they will be reloaded (or stowed) on vehicles (or vessels) by CWM. If CWM is to provide transportation the following special transportation requirements (if any) shall apply, pursuant to the Generator's direction:  
(a) Vehicles or Vessels; Hours of Transportation.

At CWM's Discretion

(b) Routes.

At CWM's discretion

4. DISPOSAL FACILITY. CWM shall dispose of the above Waste Products at the following disposal facility (or facilities):  
(a) Name/Address of Facility (Facilities) and Permittee/Permit Number(s) and Initiation and Termination Date(s)/  
Permitting Authority(ies):

Chemical Waste Management Inc.  
Highway 17 at Mile Marker #163  
Emelle, Alabama

Permit # Site 9111901 Federal 1 ALD 000622464

5. DISPOSAL METHODS: CWM shall utilize one or more of the following methods for the disposal of the Waste Products:

For the disposal of PCB liquid greater than 500 PPM PCB:  
The "Mt. Vulcanus", ocean incineration vessel at the U.S. EPA designated burn site. Permit #HQ-81-002. U.S. EPA Incineration at sea permit TXD-000751180.

6. EMERGENCY SERVICES: CWM shall provide emergency transportation, storage or disposal services, with respect to the above Waste Products, pursuant to the following:

N/A

7. COMPENSATION. The Generator shall compensate CWM as follows:

(a) For Transportation of Waste Products.

\$211.00 per 55 gallon drum, Generator will be allowed one hour loading time at their facility, with anytime thereafter being considered demurrage at a charge of \$75.00 per hour.

7.  
(a) con't.

(b) For Disposal of Waste Products.

\$250.00 per 55 gallon drum

(c) Emergency Services.

N/A

(d) Measurement of Waste Products. Waste Products shall be measured by CWM for the purpose of computing fees hereunder, at the time and place, and in the manner, as follows:

By actual drum count on manifest

(e) Generator's Billing Address. CWM shall submit its statements to:

St. Regis Paper Company  
79 E. Fountain Street  
Battle Creek, MI Attn: J. Crabtree

(f) CWM Billing Address. CWM will issue its billings from the following:

Chemical Waste Management  
Highway 17 at Mile Marker 163  
Emelle, AL 35459

8. MISCELLANEOUS TERMS AND/OR CONDITIONS.

N/A

By their signatures hereto, the parties agree that this Supplemental Information Document shall be considered an attachment to, and part of, that certain "Hazardous Waste Transportation and/or Disposal Agreement" identified above.

Date: \_\_\_\_\_

ST. REGIS PAPER COMPANY

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

CHEMICAL WASTE MANAGEMENT, INC.

By: \_\_\_\_\_

Title: \_\_\_\_\_



**GE Industry  
Sales & Services**

---

*Toledo Apparatus Service Center  
General Electric Company  
405 Dearborn Ave , Toledo, OH 43605*

Mr. Steve Weers  
Waldorf Paper  
177 Angel Street  
Battle Creek, MI 49016

August 29, 1989

RE: Oil Test Results

Steve,

Attached, please find the lab reports on the samples we recently took from your PCB transformers. The results are less than satisfactory. In fact, the actual dielectric strength is very low on every unit.

If these were 10C mineral oil, we could filter the oil to bring the dielectric up. Unfortunately, the nearest filter press dedicated to PCB work is in our Cincinnati Service Center. We could make arrangements to bring the unit to your facility and filter the units on an off day.

The biggest question you need to face is your long term goals with them. Are they in satisfactory condition to run for several more years, or should you be thinking of replacement.

If I can answer any questions or assist you in any way, please call our toll free number, (800) 221-7350.

Very truly yours,

Ron Achon, Manager  
Toledo Service Center

cc W. Thayer  
52516

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#:SAMPLE #1 SUB #3

P.O. NUMBER :097-52516-01  
JOB NUMBER :65847

ATTN:MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877			
STRENGTH KV	D-877	12 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.542	1.40 TO 1.62
WATER CONTENT	D-1533	38 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.611	-----
*VISCOSITY	D-445	55	50-60 CUS
*RESISTIVITY	D-1169	.8X10 <sup>9</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS:THIS SAMPLE FALLS WAY BELOW THE RECOMMEND LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORYGENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#:SAMPLE #2 SUB #2

P.O. NUMBER :097-52515-01  
JOB NUMBER :65847

ATTN:MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST ASTM # 08/28/89 SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	11 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.546	1.40 TO 1.62
WATER CONTENT	D-1533	34 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	53	50-60 SUS
*RESISTIVITY	D-1169	.7X10 <sup>4</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS:THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkio Salkil*

APPROVED BY:

*John Engstrom*ARKIE SALKIL  
LAB SPECIALISTJOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORYGENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605SAMPLE I.D.#: SAMPLE #3 WET END  
LIGHTING SUBP.O. NUMBER : 097-52516-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST ASTM # 08/28/89 SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	13 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.544	1.40 TO 1.62
WATER CONTENT	D-1533	31 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	53	50-60 SUS
*RESISTIVITY	D-1169	.8X7 <sup>8</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkio Balkil*

APPROVED BY:

*John Engstrom*ARKIE BALKIL  
LAB SPECIALISTJOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6043 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#:SAMPLE #4 SUB #1

P.O. NUMBER :097-52516-01  
JOB NUMBER :65847

ATTN:MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	9 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.545	1.40 TO 1.62
WATER CONTENT	D-1533	41 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	52	50-60 BUS
*RESISTIVITY	D-1169	.6XB <sup>4</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS:THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #3  
POWERHOUSE SUB

P.O. NUMBER : 097-52516-01  
JOB NUMBER : 165847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMITS  
\*\*\*\*\*  
DIELECTRIC D-877  
STRENGTH KV                      D-877                      11 KV                      30 KV MIN.  
COLOR, ASTM                      D-2129                      10                      500 MAX.  
ACIDITY, MG KOH/G                      D-974                      0.003                      0.15 MG. KOH/GM  
MAX.  
VISUAL CONDITION                      D-1702                      CLEAR NO SEDIMENT                      CLEAR, SLIGHT  
SEDIMENT  
SPECIFIC GRAVITY                      D-1810                      1.544                      1.40 TO 1.62  
WATER CONTENT                      D-1533                      38 %                      30% MAX.  
REFRACTIVE INDEX                      D-1807                      1.613                      -----  
\*VISCOSITY                      D-445                      53                      30-60 SUS  
\*RESISTIVITY                      D-1169                      .7X810                      1X10<sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #6 DRY END  
LIGHTING SUB

P.O. NUMBER : 097-52516-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*

.....TEST DATE.....  
TEST ASTM # 08/28/89 SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	10 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.544	1.40 TO 1.62
WATER CONTENT	D-1533	35 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.612	-----
*VISCOSITY	D-445	34	50-60 SUS
*RESISTIVITY	D-1169	.7X10 <sup>3</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkio Balkil*

APPROVED BY:

*John Engstrom*

ARKIE BALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #7 DRY END  
POWER PANEL SUB

P.O. NUMBER : 097-52516-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST           ASTM #           08/28/89           SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	11 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GM MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.345	1.40 TO 1.62
WATER CONTENT	D-1533	34 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	52	50-60 SUS
*RESISTIVITY	D-1169	.7X10 <sup>6</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS



**WALDORF**  
CORPORATION

177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

November 12, 1987

City of Battle Creek Fire Department  
195 East Michigan Avenue  
Battle Creek, MI 49017

Attn: Charles Owens, Department Director

Dear Mr. Owens:

The following constitutes a list of chemicals for which we have a MSDS and a quantity in excess of 10,000 lbs., as required per Title III of SARA. Enclosed please find an MSDA for each chemical.

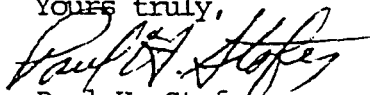
<del>✓Ammonia 2636</del>	✓Airflex 100HS — 320,000#/yr	✓Latex PB 6620A
✓Alcogum L-35	✓Alum (Liquid)	✓Nalco 625
POWER PLANT —	✓Aqua Ammonia	✓Nalco 7203 — POWER PLANT
	Busperse 59 LO	✓Nalco 7607
POWER PLANT —	✓Caustic Soda	✓PCB (In Transformers) — 28,000#
	✓Chlorine	✓Penford Gum Starch 270-P
	<del>Chrysoidine Dye</del>	✓Pro-cote 200
	✓Hercon 85	✓Sunkote 450 — 85,000#/yr.
	✓Kaolin Clay	✓Sunrez 666F
	✓Latex 76 Resin 7800 — 60,000#/yr	✓Texstrip 12
		✓Titanium Dioxide

Check for  
Reqs on PCB

We have forwarded the above information to the State Emergency Response Commission and the Local Emergency Planning Commission.

If you have any questions, please contact the undersigned.

Yours truly,

  
Paul H. Stofer  
Assistant Technical Supt.  
Process Control

PHS:ih  
encl.

↑

Alum.  
Busperse 59 LO<sup>#</sup>  
Hercon 85<sup>#</sup> what kind of Alum  
Fiber → Get MAX amounts to Gary



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

23 February 1989

City of Battle Creek Fire Department  
195 East Michigan Avenue  
Battle Creek, MI 49017

FEB 27 1989

Attn: Charles Owens, Department Director

Mr. Owens,

Attached please find the completed Tier Two Inventory Form 1988 and Confidential Location Information Sheet of Chemical(s) for which we have a M.S.D.S. and a quantity in excess of 10,000 lbs. as required pre Title III of S.A.R.A.. In preparing this information, Waldorf has relied upon the manufacturers M.S.D.S.. As such, the determination of physical and health hazards is offered in good faith but without warranty or representation.

We have also forwarded the above information to the State Emergency Response Commission and the Local Emergency Planning Commission.

If you have any questions, please contact me at your convenience.

Yours truly,

A handwritten signature in cursive script that reads "Randy B. Yates".

Randy B. Yates  
Safety/Security Supervisor  
Waldorf Corporation, Battle Creek Plant

enc;

copies; G. Kaziukewicz  
L. Spurgeon  
D. Opala

<b>Tier Two</b> <b>EMERGENCY</b> <b>AND</b> <b>HAZARDOUS</b> <b>CHEMICAL</b> <b>INVENTORY</b>  Specific Information by Chemical	<b>Facility Identification</b> Name <u>Waldorf Corporation</u> Street Address <u>177 Angell Street</u> City <u>Battlecreek</u> State <u>MI</u> Zip <u>49016</u> SIC Code <u>2631</u> Dun & Brad Street Number <u>07-256-8165</u>		<b>Owner/Operator Name</b> Name <u>Waldorf Corporation</u> Phone <u>1616 963-5511</u> Mail Address <u>177 Angell St., Battlecreek, MI 49016</u>	
	FOR OFFICIAL USE ONLY ID # _____ Date Received _____		<b>Emergency Contact</b> Name <u>Randy B. Yates</u> Title <u>Security and Training</u> Phone <u>1616 963-5511 ext 25424 H. Phone 1616 966-7006 Pager</u>	
			Name <u>Mark Shapton</u> Title <u>Engineer</u> Phone <u>1616 963-5511 ext 34024 H. Phone 1616 966-7201 Pager</u>	

Important: Read all instructions before completing form

Reporting Period From January 1 to December 31, 19 87

Confidential Location Information Sheet		Storage Codes and Locations (Confidential)	
		Storage Codes	Storage Locations
CAS # <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Chem. Name <u>Polychlorinated Biphenyls</u>		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<u>Located in conveyor room trans-</u> <u>former, coating room transformer</u> <u>ground floor, power house trans-</u> <u>former ground floor, pumping</u> <u>station transformer ground floor.</u>
CAS # <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Chem. Name <u>Penford Gum Starch 270 (Starch)</u>		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<u>Located in the conveyor room</u> <u>storage area, and the coating</u> <u>dept. on the first floor.</u>
CAS # <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Chem. Name <u>PRO-COTE 200</u>		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<u>Located in the conveyor room</u> <u>storage area, and the coating</u> <u>dept. on the second floor.</u>

**Certification, (Read and sign after completing all sections)**  

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Randy B. Yates Safety Sec. Training [Signature] 2-24-87  
 Name and official title of owner/operator (or owner/operator's authorized representative) Signature Date

☐ I have attached a site plan  
☐ I have attached a list of site coordinates above ground

WALDORF CORPORATION  
ST. PAUL MAIL ROOM  
FACSIMILE MESSAGE

FACSIMILE NO. (616) 963-5511 ext 298 DATE 12/28/89

TO Les Spurgeon LOCATION Battle Creek

FROM Gary Kaziukewicz NO. PAGES 6 PLUS COVER

NOTE: If any problems are encountered, or if there are any questions regarding this transmission, please call (612) 641-4576. Thank you.

WC-1308 AUG 87

*Confirm*  
*Acc. - marked a file*  
*(1) - PCB logs - do we have images on it?*  
*(2) - acc. migration is it 87, 88, 89*  
*(3) - EPA - what action per?*  
*(4) - Combustion mills photos*  
*7 Trans Form 1, 2, 3*

#709

# DORSEY & WHITNEY

A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATION

2800 FIRST BANK PLACE EAST  
MINNEAPOLIS, MINNESOTA 55408  
(612) 340-2800

## FACSIMILE COVER SHEET

DEX 6100 (612) 340-2868

RAPICOM 205 (612) 340-2768

DATE: 12/28/85 TIME: \_\_\_\_\_

TOTAL NUMBER OF PAGES (INCLUDING THIS COVER SHEET): 6

TO: MR. GARY KAZIUKIEWICZ

FIRM NAME: WALDORF CORPORATION

LOCATION: ST. PAUL

FACSIMILE NUMBER: 641-4791

TELEPHONE NUMBER (TO CONFIRM RECEIPT OF MATERIAL): 641-4709

FROM: M. KASTER

TELEPHONE NUMBER: 340-7815

### COMMENTS:

*Please deliver to Gary K ASAP.*

*→ Gary: Please FAX a copy of the answer to  
Butler Creek. Also, deliver a copy to  
Jack Greenwald's office for his  
review.*

PLEASE CONTACT FACSIMILE OPERATOR \_\_\_\_\_  
AT (612) 340-2872 IF TRANSMISSION IS INCOMPLETE OR CANNOT BE READ.

3589 - 330521 - 0023

BEFORE THE  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION V

In Re:

Docket No. TSCA-V-C-08-90

Waldorf Corporation  
Battle Creek, Michigan,

RESPONDENT'S ANSWER  
AND REQUEST FOR HEARING

Respondent.

I.

ANSWER

Respondent Waldorf Corporation, for its Answer and Request for Hearing, states as follows:

1. Respondent does not admit or deny the allegations in Paragraph 1 of the Complaint, but states that the statutes and/or regulations cited speak for themselves.

2. Respondent is without sufficient knowledge or information with respect to the allegations in Paragraph 2 of the Complaint, and therefore denies the same.

3. Respondent admits, under Paragraph 3 of the complaint, that it is a corporation incorporated under the laws of the State of Delaware with a place of business at 177 Angell Street, Battle Creek, Michigan. Respondent lacks sufficient knowledge and information to form a belief about whether it was a corporation at all times relevant to the Complaint and therefore denies the same.

4. Respondent does not admit or deny the allegations in Paragraph 4 of the Complaint, but states that the statutes and/or regulations cited speak for themselves.

5. Respondent admits that it is a "person," as defined in Paragraph 5 of the Complaint. The allegation in Paragraph 5 that respondent is subject to the prohibitions set forth in 40 C.F.R. Part 761 calls for a legal conclusion and Respondent therefore denies the same.

6. Respondent admits the allegations in Paragraph 6 of the Complaint.

7. Respondent admits the allegation in Paragraph 7 of the Complaint that representatives of the U.S. EPA inspected Respondent's facility, but lacks sufficient knowledge or information to form a belief about the purpose of the inspection.

8. Respondent admits the allegation in Paragraph 8 of the Complaint.

9. Respondent admits the allegation in Paragraph 9 of the Complaint.

10. Respondent does not admit or deny the allegations in Paragraph 11 of the Complaint, but states that the statutes and/or regulations cited speak for themselves.

11. Respondent denies the allegations in Paragraph 12 of the Complaint. Respondent affirmatively asserts that it has maintained records regarding the disposition of PCBs and PCB items.

12. Respondent does not admit or deny the allegations in Paragraph 14 of the Complaint, but states that the statutes and/or regulations cited speak for themselves.

13. Respondent denies the allegation in Paragraph 15 of the Complaint. Respondent affirmatively asserts that it has on several occasions informed the local fire department about the PCB transformers at its facility. The fire department is aware of the address of the facility, the location of transformers within the building, the principal constituent of the transformers and the name and phone number of the person to contact at the facility.

14. Respondent does not admit or deny the allegations in Paragraph 16 of the Complaint, but states that the statutes and/or regulations cited speak for themselves.

15. Respondent denies the allegation in Paragraph 17 of the Complaint and affirmatively states that it was unaware of any combustible material stored within five meters of its seven PCB transformers.

16. Respondent denies the allegations in Paragraph 18 of the Complaint.

17. Respondent does not admit or deny the allegations in Paragraph 20 of the Complaint, but states that the statutes and/or regulations cited speak for themselves.

18. Respondent denies the allegations in Paragraph 21 of the Complaint. Respondent affirmatively states that the means

of access and the PCB transformers were properly marked to warn firefighters as provided in 40 C.F.R. § 761.40(j).

## II.

### AFFIRMATIVE DEFENSES

19. Respondent's electricians have inspected the PCB transfers at the facility on a regular basis.

20. Respondent has proper records and manifests regarding disposition of PCB transformers. Respondent has undertaken good faith efforts to comply with PCB regulations at all of its facilities, as demonstrated by prior EPA inspections.

21. Respondent has an excellent history of compliance and responsiveness regarding environmental laws and regulations.

22. Respondent has identified (and reported to the city of Battle Creek Fire Department) the PCB transformers at its facility under the SARA Title III Community Right-to-Know provisions.

## III.

### PROPOSED CIVIL PENALTY

23. Respondent asserts that in determining the amount of a civil penalty, the administrator has not taken into account the nature, circumstance, limited extent and lack of gravity of the alleged violation and, with respect to Respondent, has not taken into account Respondent's excellent compliance history, lack of prior violations, culpability and other matters as justice requires, in accordance with 15 U.S.C. § 2615(2)(C).

IV.

RESPONDENT'S REQUEST FOR HEARING

24. Pursuant to 15 U.S.C. § 2616(a) and 5 U.S.C. § 552 et seq., Respondent herein requests a hearing to contest the facts contained in the Complaint and to contest the appropriateness of a penalty.

V.

RESPONDENT'S REQUEST FOR A SETTLEMENT CONFERENCE

25. Pursuant to 40 C.F.R. § 22.18, Respondent herein requests an informal settlement conference.

FOR THE REASONS HEREIN STATED, Respondent requests that:

1. The Complaint be dismissed, and
2. No civil penalty be imposed; or
3. If any civil penalty is imposed, the proposed penalty be substantially reduced based on (a) Respondent's lack of culpability; (b) no history of violations, and (c) Respondent's good faith efforts to comply to EPA requirements.

Dated: December 29, 1989.

DORSEY & WHITNEY

By

Mark R. Kaster  
Atty. Reg. No. 159517  
2200 First Bank Place East  
Minneapolis, MN 55402  
Telephone: (612) 340-7815

Attorneys for Respondent  
Waldorf Corporation



**GE Industry  
Sales & Services**

*Cleveland Apparatus Service  
General Electric Company  
4477 E. 49th St., Cleveland, OH 44125*

*(216) 883-1000*

WALDORF PAPER  
177 ANGELL STREET  
BATTLECREEK, MICHIGAN 49016  
ATTN: WILLIAM R. DEVER

Subject: Certificate of Compliance

Gentlemen:

The General Electric Co., EPA ID # OHD004527008, the  
material received from:

Manifest Number: 1714

WALDORF PAPER  
177 ANGELL STREET  
BATTLECREEK, MICHIGAN 49016

TRANSFORMER on 07-11-90

Were Disposed of at:  
SD MYERS INC.  
180 SOUTH AVE  
TALLMADGE, OHIO 44278  
EPA IDENTIFICATION NUMBER: D053576294  
MANIFEST DOCUMENT NUMBER: 01738

Thank you for the opportunity to be of service. If you have  
any questions please call us at (216)883-1000 ext. 246.

Yours very truly,

Paul T. Bender  
PCB Facility Supervisor  
Cleveland Service Center



# CERTIFICATE OF DESTRUCTION

S.D. Myers Inc. 180 South Ave Tallmadge, Ohio 44278 Phone - 216-633-2666

Document # - 014544 - 1  
EPA ID# - D053576294  
Date - 10/04/90  
P.O. Number-

This document is to certify that S.D. MYERS, INC. has completed the disposal of your transformer by utilizing our RESOURCE RECOVERY PROCESS.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C.2615). I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instruction, made the verification that this information is true, accurate, and complete.

Generator: 8640 GENERAL ELECTRIC  
Owner: 4477 E. 49TH ST.  
CLEVELAND  
216/883-1000

Generator: WALDORF PAPER  
177 ANGELL ST.  
Customer: BATTLE CREEK MI 49016

R-No.	Serial Number	Cust Ref No.	WT in Kg.	PPM	Liq	Incoming Manifest	Date Out of Service	Date Destroyed
0007805	8113527	61333 001	4,091	PURE	N	01738	07/10/90	08/17/90
0007806	7026594	61333 002	2,551	PURE	N	01738	07/10/90	08/17/90
0007807	NO NAMEPLATE	61344 002	2,136	PURE	N	01738	07/30/90	08/17/90
0007808	60855	61344-001	2,134	PURE	N	01738	07/30/90	08/20/90
0007816	88931	61344A001	1,980	PURE	N	01738	07/30/90	09/07/90

Audited By:

Sheree Butcher  
Contract Coordinator

Approved By:

David L. Belden  
Environmental Coordinator

The Disposition of Liquid is per attached detailed description sheet.



**GE Industry  
Sales & Services**

---

*Cleveland Apparatus Service  
General Electric Company  
4477 E 49th St., Cleveland, OH 44125  
(216) 883-1000*

WALDORF CORP.  
177 ANGELL STREET  
BATTLE CREEK, MICHIGAN 49016

ATTN: DON OPALA

Subject: Generators Manifest Copy.

Gentlemen:

Attached please find your Generator copy of manifest #02028 for PCB materials received and signed for the Treatment Storage or Disposal Facility (TSDF), dated 05-06-91.

Certificates of disposal will be forwarded as soon as received from the TSDF. Thank you for the opportunity to be of service, if you have any questions please call us at (216)883-1000 ext. 246.

Yours very truly,

Paul T. Bender  
PCB Facility Supervisor

## UNIFORM HAZARDOUS WASTE MANIFEST

## CONTINUATION OF SECTION 15

GENERATORS NAME: <u>Waldorf Corp.</u>	MANIFEST #: <u>02023</u>
AND ADDRESS: <u>177 Angell St.</u>	EPA ID NUMBER:
<u>Battle Creek, Michigan 49016</u>	<u>MI D270013758</u>
Contact: <u>Don Opala</u>	PHONE #: <u>(616) 963-5511</u>

ITEM 11 a,b,c,d	SERIAL # OR ID #	OUT OF SERVICE DATE FOR DISPOSAL	PCB WEIGHT IN KILOGRAMS	PCB WASTE CODE	REMARKS
a	8113528	5-6-91	3,379	PCB 1	TRANSFORMER (EMPTY)
a	8113529	5-6-91	3,379	PCB 1	" "
a	8037219	5-6-91	1,638	PCB 1	" "
b	61500-01	5-6-91	1,701	PCB 2	TRANSFORMER OIL (300 gallons)
b	61500-02	5-6-91	1,701	PCB 2	TRANSFORMER OIL (300 gallons)
b	61500-03	5-6-91	1,559	PCB 2	TRANSFORMER OIL (275 gallons)
c	61500-04	5-6-91	EST. 50	PCB 2	SOLID WASTE
d	61500-05	5-6-91	EST. 50	PCB 2	TRANSFORMER OIL (15 gal)

INSTRUCTION: Item 11 Represents the US DOT Description.PCB Waste Code: PCB 1 for PCB Articles (Transformers, Switches, Capacitors)  
PCB 2 for Containers (Drums of Solid Waste, Drums of Liquids).



**MICHIGAN DEPARTMENT  
OF NATURAL RESOURCES**

**DO NOT WRITE IN THIS SPACE**  
ATT. ☐ DIS. ☐ REJ. ☐ PR ☐

Required under authority of Act 64 PA  
1979 as amended and Act 136 PA  
1969

Failure to file is punishable under  
section 299 548 MCL or Section 10 of  
Act 136 PA 1969

Please print or type

Form Approved OMB No 2050 0039 Expires 9 30 91

UNIFORM HAZARDOUS WASTE MANIFEST		1 Generator's US EPA ID No. MI D 27061371000		Manifest Document No. 3		2 Page 1 of 2		Information in the shaded areas is not required by Federal law			
3 Generator's Name and Mailing Address <b>WILLIAM COLE</b> <b>177 ANCONA ST., BAYTOWN CRK, MICHIGAN 49016</b> <b>(616) 963-5511 CONTACT MR. DON OPALA</b>						A State Manifest Document Number <b>MI 1663128</b>					
4 Generator's Phone ( ) <b>(616) 963-5511</b>						B State Generator's ID					
5 Transporter 1 Company Name <b>ENVIRONMENTAL TRANSPORTATION INC. INC.</b>						C State Transporter's ID <b>MI D 0081600363</b>					
6 Transporter 1 US EPA ID Number <b>0081600363</b>						D Transporter's Phone					
7 Transporter 2 Company Name						E State Transporter's ID					
8 Transporter 2 US EPA ID Number						F Transporter's Phone					
9 Designated Facility Name and Site Address <b>GENERAL ELECTRIC CO</b> <b>4477 EAST 40TH STREET</b> <b>CLEVELAND, OHIO 44125</b>						G State Facility's ID <b>OH D 004527000</b>					
10 Designated Facility US EPA ID Number <b>004527000</b>						H Facility's Phone					
11 US DOT Description (including Proper Shipping Name, Hazard Class, and HM ID NUMBER)						12 Containers No Type		13 Total Quantity	14 Unit M/Vol	Waste No	N/H
a	X	HAZARDOUS SUBSTANCE, SOLID, N.O.S., CORN K NAD108, HQ. (POLYCHLORINATED BIPHENYLS)				003	CM	08396	KG		
b	X	HAZARDOUS SUBSTANCE, LIQUID, N.O.S., CORN-K NAD108, HQ. (POLYCHLORINATED BIPHENYLS)				003	TP	04961	KG		
c	X	HAZARDOUS SUBSTANCE, SOLID, N.O.S., CORN-K NAD108, HQ. (POLYCHLORINATED BIPHENYLS)				001	DM	00050	KG		
d	X	HAZARDOUS SUBSTANCE, SOLID, N.O.S., CORN-K NAD108, HQ. (POLYCHLORINATED BIPHENYLS)				001	DM	00050	KG		
15 Additional Descriptions for Materials Listed Above						16 Handling Codes for Wastes (Shaded areas are not required)					
17 Special Handling Instructions and Additional Information <b>DO NOT OPEN LIDS, AVOID SKIN CONTACT! USE PROTECTIVE GEAR (SEE CONTINUATION SHEET)</b>											
18 GENERATOR'S CERTIFICATION I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified packed marked and labeled and are in all respects in proper condition for transport by highway according to applicable international and national government regulations  If I am a large quantity generator I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment storage or disposal currently available to me which minimizes the present and future threat to human health and the environment OR if I am a small quantity generator I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford											
Printed/Typed Name <b>DONALD OPALA</b>						Signature <i>Donald Opala</i>		Date Month Day Year <b>05/16/91</b>			
17 Transporter 1 Acknowledgement of Receipt of Materials						Date					
Printed/Typed Name <b>ALLEN SPAUR</b>						Signature <i>Allen Spaur</i>		Month Day Year <b>05/06/91</b>			
18 Transporter 2 Acknowledgement or Receipt of Materials						Date					
Printed/Typed Name						Signature		Month Day Year			
19 Discrepancy Indication Space											
20 Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19											
Printed/Typed Name <b>Paul T Bender</b>						Signature <i>Paul T Bender</i>		Date Month Day Year <b>05/07/91</b>			

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1 800 292 4706 OR OUT OF STATE AT 517 373 7680 AND THE NATIONAL RESPONSE CENTER AT 1 800-424 8802 24 HOURS PER DAY

## UNIFORM HAZARDOUS WASTE MANIFEST

## CONTINUATION OF SECTION 15

GENERATORS NAME: <u>Waldorf Corp.</u>	MANIFEST #: <u>02023</u>
AND ADDRESS: <u>177 Angell St.</u>	EPA ID NUMBER:
<u>Battle Creek, Michigan 49016</u>	<u>MID270013758</u>
Contact: <u>Don Opala</u>	PHONE #: <u>(616) 963-5511</u>

ITEM 11 a,b,c,d	SERIAL # OR ID #	OUT OF SERVICE DATE FOR DISPOSAL	PCB WEIGHT IN KILOGRAMS	PCB WASTE CODE	REMARKS
a	8113528	5-6-91	3,379	PCB 1	TRANSFORMER (EMPTY)
a	8113529	5-6-91	3,379	PCB 1	" "
a	8037219	5-6-91	1,638	PCB 1	" "
b	61500-01	5-6-91	1,701	PCB 2	TRANSFORMER OIL (300 gallons)
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b	61500-03	5-6-91	1,559	PCB 2	TRANSFORMER OIL (275 gallons)
c	61500-04	5-6-91	EST. 50	PCB 2	SOLID WASTE
d	61500-05	5-6-91	EST. 50	PCB 2	TRANSFORMER OIL (15 GAL)

INSTRUCTION: Item 11 Represents the US DOT Description.

PCB Waste Code: PCB 1 for PCB Articles (Transformers, Switches, Capacitors  
PCB 2 for Containers (Drums of Solid Waste, Drums of Liquids).

Don O.



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

August 20, 1991

This manifest was inadvertently misplaced. We are submitting  
the same as required by DNR regulations.

Thank you,

A handwritten signature in cursive script, reading "Paul H. Stofer".

Paul H. Stofer

PHS/lsc

**DNR**  
MICHIGAN DEPARTMENT  
OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE

ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

1979, as amended and Act 136, P.A. 1969.  
Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, P.A. 1969.

Please print or type.

Form Approved. OMB No. 2050-0039 Expires 9-30-91

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. <b>M I D 2 7 0 0 1 3 7 5 8</b>		Manifest of <b>2</b>		2. Page 1 of <b>2</b>		Information in the shaded areas is not required by Federal law.									
3. Generator's Name and Mailing Address <b>WALDORF CORP., 177 ANGELL ST., BATTLE CREEK, MICHIGAN 49016 (616) 963-5511 CONTACT: MR. DON OPALA</b>						A. State Manifest Document Number <b>MI 1663128</b>											
4. Generator's Phone ( )						B. State Generator's ID											
5. Transporter 1 Company Name <b>ENVIRONMENTAL TRANSPORTATION SVC, INC.</b>						C. State Transporter's ID											
6. US EPA ID Number <b>OKD981605363</b>						D. Transporter's Phone <b>(405) 677-8781</b>											
7. Transporter 2 Company Name						E. State Transporter's ID											
8. US EPA ID Number						F. Transporter's Phone											
9. Designated Facility Name and Site Address <b>GENERAL ELECTRIC CO 4477 EAST 49TH STREET CLEVELAND, OHIO 44125</b>						G. State Facility's ID											
10. US EPA ID Number <b>PHD004527008</b>						H. Facility's Phone <b>(216) 883-1000</b>											
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER).						12. Containers		13. Total Quantity		14. Unit		15. Waste No.		N/H			
						No. Type		Quantity		Wt/Vol							
a. <b>X</b> <b>HAZARDOUS SUBSTANCE, SOLID, N.O.S., ORM-E NA9188, RQ, (POLYCHLORINATED BIPHENYLS)</b>						<b>0 0 3 C M</b>		<b>EST 0 8 3 9 6</b>		<b>KG</b>		<b>0 2 6 L</b>		<b>N</b>			
b. <b>X</b> <b>HAZARDOUS SUBSTANCE, LIQUID, N.O.S., ORM-E NA9188, RQ, (POLYCHLORINATED BIPHENYLS)</b>						<b>0 0 3 T P</b>		<b>EST 0 4 9 6 1</b>		<b>KG</b>		<b>0 2 6 L</b>		<b>N</b>			
c. <b>X</b> <b>HAZARDOUS SUBSTANCE, SOLID, N.O.S., ORM-E NA9188, RQ, (POLYCHLORINATED BIPHENYLS)</b>						<b>0 0 1 D M</b>		<b>EST 0 0 0 5 0</b>		<b>KG</b>		<b>0 2 6 L</b>		<b>N</b>			
d. <b>X</b> <b>HAZARDOUS SUBSTANCE, LIQUID, N.O.S., ORM-E NA9188, RQ, (POLYCHLORINATED BIPHENYLS)</b>						<b>0 0 1 D M</b>		<b>0 0 0 5 0</b>		<b>KG</b>		<b>0 2 6 L</b>		<b>N</b>			
11a) Transformer (BIPHY)						REFERENCE EMERGENCY GUIDE (24 HOURS)						a. <b>1</b>					
11b) Transformer OIL						EMERGENCY HOTLINE						b. <b>1</b>					
11c) SOLID WASTE						1 (800) 635-8918						c. <b>1</b>					
11d) Transformer OIL												d. <b>1</b>					
15. Special Handling Instructions and Additional Information <b>DIRE AND CONTAIN SPILLS, AVOID SKIN CONTACT! GE REF#61500 (SEE CONTINUATION SHEET)</b>																	
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR: if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.																	
Printed/Typed Name <b>DONALD OPALA</b>										Signature <i>Donald Opala</i>				Date Month Day Year <b>05/06/91</b>			
17. Transporter 1 Acknowledgement of Receipt of Materials																	
Printed/Typed Name <b>ALLEN SPAUR</b>										Signature <i>Allen Spaur</i>				Date Month Day Year <b>05/06/91</b>			
18. Transporter 2 Acknowledgement or Receipt of Materials																	
Printed/Typed Name										Signature				Date Month Day Year			
19. Discrepancy Indication Space																	
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.																	
Printed/Typed Name										Signature				Date Month Day Year			

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

TO: FILE

DATE: AUGUST 15, 1991

FROM: DON OPALA

SUBJECT: PCB TRANSFORMERS,  
PHASE TWO

On May 7, 8, 9, and 10, 1991 three PCB transformers were removed. This was phase two of three for PCB transformer removal. Phase three is tentatively scheduled for early 1992 March or April. Phase three will involve two remaining transformers. This will complete the PCB project and eliminate all PCB contamination at Waldorf Corporation's Battle Creek, Michigan location.

A complete copy of General Electric's proposal number 389E0734 and a copy of Generators Manifest forms were sent to Mark Kaster, Attorney, Dorsey and Whitney in Minneapolis, Minnesota. Sent certified mail number \_\_\_\_\_.

Copies of Generators Manifest forms were sent to:

Patricia Spitzley, United States Environmental  
Protection Agency, Box 30028, Lansing, Michigan  
48909.  
Certified Mail number \_\_\_\_\_.

Chief Charles W. Owens, Battle Creek Fire  
Department, 195 East Michigan Avenue, Battle Creek,  
Michigan 49017.  
Certified Mail number \_\_\_\_\_.

Lawrence Larsen, Personnel, and Earl Stukel,  
Engineering, Waldorf Corporation, 2250 Wabash  
Avenue, St. Paul, Minnesota 55114.  
Certified Mail number \_\_\_\_\_.

*Don Opala*

Lawrence Larsen, Personnel  
Earl Stukel, Engineering  
Waldorf Corporation  
2250 Wabash Avenue  
St. Paul, MN 55114

On May 7, 8, 9, and 10, 1991 three PCB transformers were removed. This was phase two of three for PCB transformer removal. Phase three is tentatively scheduled for early 1992 March or April. Phase three will involve two remaining transformers. This will complete the PCB project and eliminate all PCB contamination at Waldorf Corporation's Battle Creek, Michigan location.

Attached are the Manifest records showing proper disposal of PCB transformers.

Thank you,

Don Opala

cc: Mark Shapton  
Les Spurgeon

DO/l dm

Patricia Spitzley  
United States Environmental  
Protection Agency  
Box 30028  
Lansing, MI 48909

On May 7, 8, 9, and 10, 1991 three PCB transformers were removed. This was phase two of three for PCB transformer removal. Phase three is tentatively scheduled for early 1992 March or April. Phase three will involve two remaining transformers. This will complete the PCB project and eliminate all PCB contamination at Waldorf Corporation's Battle Creek, Michigan location.

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Thank you,

Don Opala

cc: Mark Shapton  
Les Spurgeon

DO/l dm

Chief Charles W. Owens  
Battle Creek Fire Department  
195 East Michigan Avenue  
Battle Creek, MI 49017

On May 7, 8, 9, and 10, 1991 three PCB transformers were removed. This was phase two of three for PCB transformer removal. Phase three is tentatively scheduled for early 1992 March or April. Phase three will involve two remaining transformers. This will complete the PCB project and eliminate all PCB contamination at Waldorf Corporation's Battle Creek, Michigan location.

Attached are the Manifest records showing proper disposal of PCB transformers.

Thank you,

Don Opala

cc: Mark Shapton  
Les Spurgeon

DO/l dm

12/28/88

16:20

616 963 5564

WALDORF BC

ST PAUL

002/009



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

September 7, 1989

Patricia Spitzley  
United States Environmental Protection Agency  
Box 30028  
Lansing, MI 48909

Mrs. Spitzley:

This letter and enclosed documents are in response to your inspection of the Waldorf Corporations transformers on 27 July 1989. If you require any further information about this subject you can contact me at the address that appears at the end of this letter.

Yours truly,

Randy B. Yates  
Supervisor Safety/Security  
Waldorf Corporation  
177 Angell  
Battle Creek, MI 49016  
(616) 963-5511 ext. 346

RBV/sf

Enclosures

12/28/89

16:21

616 963 5564

WALDORF BC

ST PAUL

003/009



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

230 SOUTH DEARBORN ST

CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF.

FIELD CITATIONWaldorf Corporation

Facility Name

177 Argell St.Compliance Inspection  
Date:Battle Creek, MI

Facility Address

City, State

07 27 89

\* \* \*

This is a formal notification concerning the compliance inspection conducted at the facility named above, pursuant to Section II of the Toxic Substances Control Act (TSCA), 15 U.S.C. Section 2601 et seq. The purpose of the inspection was to assess the facility's compliance with the requirements of the Polychlorinated Biphenyls (PCB) Final Rule, 40 C.F.R. Part 761, and amendments.

Issuance of this citation and receipt of any documentation does not preclude the U.S. EPA from proceeding under TSCA or any other applicable statute and assessing appropriate penalties. Any enforcement action taken by the U.S. EPA after a final evaluation of the inspection report would not be limited to the violations listed in this citation.

It appears that the above-named facility was not in compliance with the requirements of 40 C.F.R. Part 761. The inspection revealed the following violations:

1. ☒ AUTHORIZATIONS  
(Use 761.30)2. ☒ MARKING  
(761.40)3. ☐ STORAGE  
(761.65)4. ☐ RECORDKEEPING  
(761.180)

5. OTHER \_\_\_\_\_

Comments On Violations Cited Above

761.30 - Fire department documentation

not observed for PCB transformers

up  
- Annual documents for 86 & 89

- PCB transformer disposed of  
around 1988

761.40 - Entry way to transformer vaults  
not marked

761.30 Combustibles within 5 meters  
of transformer enclosure

- 3 -

CITATIONDOCUMENTATION REQUIRED TO CORRECT THE ABOVE VIOLATION(S)

- Copy of fire department letter stating PAB transformers are present
- Recent annual document for 84-89
- Recent documentation on design of PAB transformer
- Entry into to access former area marked
- More concrete block foundation surface

Within thirty (30) days of receipt of this field citation the facility must submit the requested documentation to show that the violation(s) has/have been corrected. The documentation must be submitted to:

Inspector's Name ROBERT W. BROWN

Address Box 3001X

City, State LAKE MINN, MN

If you have questions concerning this inspection or this field citation, please call the inspector at (517) 342-4800

*Robert W. Brown*  
 Issued To/Received By Robert W. Brown Date 07-27-89  
 Inspector's Signature Date



U.S. ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

TOXIC SUBSTANCES CONTROL ACT

# TSCA INSPECTION CONFIDENTIALITY NOTICE

Form Approved  
OAHB No. 2070-0007  
Expires 3-31-89

## 1. INVESTIGATION IDENTIFICATION

DATE 07/28/89 INSPECTOR NO. ML-017 DAILY USE NO. 01

3. INSPECTOR NAME

PATRICIA SONDEST  
Superior Industrial Resources  
Waste Management  
Box 30028  
Laurens, SC 29307

2. FIRM NAME

Superior Industrial Resources  
174 Commerce Street  
Laurens, SC 29307

4. CHIEF EXECUTIVE OFFICER NAME

5. TITLE

## TO ASSERT A CONFIDENTIAL BUSINESS INFORMATION CLAIM

It is possible that EPA will receive public requests for release of the information obtained during inspection of the facility and/or other requests will be handled by EPA in accordance with provisions of the Freedom of Information Act (FOIA), 5 U.S.C. 552 (EPA regulations issued December 40 CFR Part 2), and the Toxic Substances Control Act (TSCA), Section 14. EPA is required to make maximum information available in response to FOIA requests unless the Administrator of the Agency determines that the data contain information entitled to confidential treatment or may be withheld from release under other provisions of FOIA.

Any or all the information collected by EPA during the inspection may be claimed confidential if it relates to trade secrets or commercial or financial matters that you consider to be confidential business information. If you assert a CBI claim, EPA will disclose the information only to the extent, and by means of the procedures set forth in the regulations (listed above), governing EPA's treatment of confidential business information. Among other things, the regulations require that EPA notify you in advance of publicly disclosing any information you have claimed as confidential business information.

A confidential business information (CBI) claim may be asserted if you state: You may assert a CBI claim prior to, during, or after the information is collected. The information form was developed by this Agency to assist you in asserting a CBI claim. If it permits you to assert a CBI claim on your own stationery or by marking the individual documents or samples "TSCA confidential business information," it is not necessary for you to use this form. The Inspector will be glad to answer any questions you may have regarding the Agency's procedures.

While you may claim any collected information or sample as confidential business information, such claims are unlikely to be upheld if they are challenged unless the information meets the following criteria:

1. Your company has taken measures to protect its confidentiality of the information, and it intends to continue to take such measures.

2. The information is not reasonably obtainable where your company's competitors could prepare better than you, and, because of the competitive means (other than discovery based on knowing or suspected need in a judicial or such judicial proceedings).

3. The information is not publicly available elsewhere.

4. Disclosure of the information would cause substantial harm to your company's competitive position.

At the completion of the inspection, you will be given a receipt for all documents, samples, and other materials collected. At that time, you may make claims that some or all of the information is confidential business information.

If you are not making a CBI claim, you must sign a CBI claim form. This form will be sent by mail along with the receipt for documents, samples, and other materials to the Chief Executive Officer of your firm within 2 days of receipt. The Chief Executive Officer must submit a statement explaining any information which should receive confidential treatment.

The statement must be sent to the Agency within 30 days of receipt.

*Don't forget to fill out the CBI claim form and send it to the Agency within 30 days of receipt.*

The information collected by EPA during the inspection will be made available to the public within 7 calendar days of receipt of the information. If you have any time to make a claim, you must do so within 30 days of receipt of the information. If you do not make a claim, the information will be made available to the public within 7 calendar days of receipt of the information. If you do make a claim, the information will be made available to the public within 30 days of receipt of the information.

## TO BE COMPLETED BY FACILITY OFFICIAL RECEIVING THIS NOTICE

I have received and read the notice

SIGNATURE

*Patricia Sondest*

*Patricia Sondest*

DATE SIGNED

*July 28, 1989*

ADDRESS

US ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

TOXIC SUBSTANCES CONTROL ACT

## NOTICE OF INSPECTION

Form Approved  
OMB No. 2070-0007  
Expires 3-31-88

## 1. INVESTIGATION IDENTIFICATION

DATE INSPECTOR NO. DAILY SEQ. NO.

07/27/89 MI-017 01

INSPECTOR ADDRESS

Dept. Natural Resources  
Box 30028  
TAMOLINA MI 48769

2. FIRM NAME

3. FIRM ADDRESS

1771 Highway 28 N  
Battle Creek MI

## REASON FOR INSPECTION

Under the authority of Section 11 of the Toxic Substances Control Act: PCB Inspection

- ☒ For the purpose of inspecting (including taking samples, photographs, statements, and other inspection activities) an establishment, facility, or other premises in which chemical substances or mixtures or articles containing same are manufactured, processed or stored, or held before or after their distribution in commerce (including records, files, papers, processes, controls, and facilities) and any conveyance being used to transport chemical substances, mixtures, or articles containing same in connection with their distribution in commerce (including records, files, papers, processes, controls, and facilities) bearing on whether the requirements of the Act applicable to the chemical substances, mixtures, or articles within or associated with such premises or conveyance have been complied with.

- ☐ In addition, this inspection extends to (Check appropriate boxes):

☐ A. Financial data☐ D. Personnel data☐ B. Sales data☐ E. Research data☐ C. Pricing data

The nature and extent of inspection of such data (provided it is through a source it is factors).

INSPECTOR SIGNATURE

Patricia A. Sotzley

NAME

Patricia A. Sotzley  
Environmental

DATE

DATE SIGNED

RECIPIENT SIGNATURE

Randy Blaine Vafps

NAME

Randy Blaine Vafps

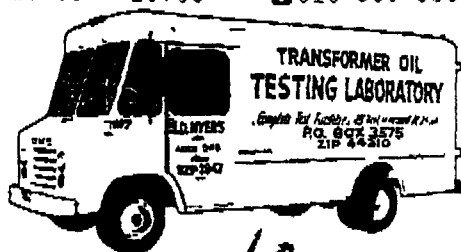
DATE

DATE SIGNED

Post-It™ brand fax transmittal memo 7571 # of pages > 94/

To Gary Kay	From Don Opala
Co Waldorf Corp	Co Waldorf Corp
Dept ST Paul	Phone #
Fax #	(66) 963-5564

1329



# Transformer consultants

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FWDate 5-5-76City Battle CreekState Mi.

### LOCATION OF TRANSFORMER

TC # 3Substation Name or Number Conveyor☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>42</u>	<u>0.02</u>	<u>—</u>	<u>—</u>	<u>WHD</u>	<u>1.54</u>	<u>Clr</u>	<u>GOOD</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer West.Primary Volts 2400Gal. 240☐ Oil  
☒ AskarelSerial Number YDR 4085Secondary Volts 480Impedance 5.6KVA Rating 1000Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 31Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum +1/2H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

### VISUAL INSPECTION

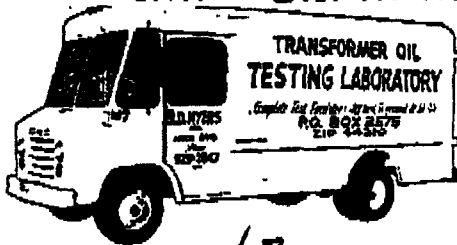
Cleanliness ☐ Good☐ Fair☐ BadGaskets ☐ OK☐ BadPaint ☐ Good☐ Fair☐ BadBushings ☐ OK☐ BadLeaks ☐ None☐ Fair☐ Bad

Other \_\_\_\_\_

### NOTES - COMMENTS

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3 $\phi$  Power? ☐ NoDe-Energize? ☐ No



**Waldorf**  
**consultants**

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

**FIELD COPY**  
**REPORT OF TRANSFORMER SURVEY**

Mobile Test Laboratory No. 43

Analyst FN Date 5-5-76

Customer St. Regis Paper

City Butte

State Idaho

**LOCATION OF TRANSFORMER**

TC # 4

Substation Name or Number Conveyer  
Angell Plant

☒ Indoor

☐ Outdoor

☐ Roof

☒ Ground

☐ Platform

☐ Pole

Unit Or Tag Number

**REPORT OF TRANSFORMER LIQUID ANALYSIS**

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>41</u>	<u>0.045</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>Clear</u>	<u>Good</u>
2								
3								

**NAMEPLATE INFORMATION**

Manufacturer GE

Primary Volts 2400

Gal. 434

☐ Oil

☒ Askarel

Serial Number 8113530

Secondary Volts 480

Impedance 5.63

KVA Rating 1000

Phase/Cycle 3/60

Other

**ADDITIONAL EQUIPMENT**

Liquid Level N

Radiators ☒ Yes ☐ No

Conservator Tank ☐ Yes ☒ No

Top Valve 1"

Temperature 50

Fans ☐ Yes ☒ No

Tap Changer Comp. ☐ Yes ☒ No

Bottom Valve 1"

Pressure/Vacuum —

H<sub>2</sub>O Cooled ☐ Yes ☒ No

Bushings: ☐ Top ☒ Side

Other Access

**VISUAL INSPECTION**

Cleanliness ☒ Good

Gaskets ☒ OK

Paint ☒ Good Silver

☐ Fair

☐ Bad

Bushings ☒ OK

Leaks ☒ None

Other

**NOTES - COMMENTS**

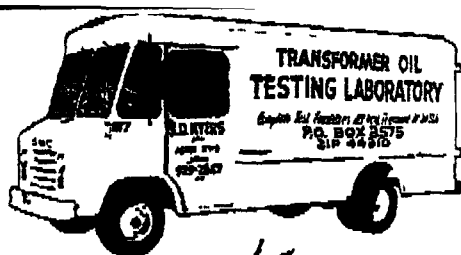
**SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY**

Problem Park ReR? ☐ No

Problem ReR Hoses? ☐ No

Problem 3 $\phi$  Power? ☐ No

De-Energize? ☐ No



# Transformer consultants

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FNDate 5-5-76Customer St. Regis PaperCity Battle CreekState MI

## LOCATION OF TRANSFORMER

TC # 5Substation Name or Number Conveyer  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

## REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>46</u>	<u>0.025</u>	<u>—</u>	<u>—</u>	<u>Wh. 1.540</u>	<u>Cl.</u>	<u>Good</u>	
2								
3								

## NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 209☐ Oil  
☒ AskarelSerial Number 8037218Secondary Volts 208Y/120Impedance 4.9KVA Rating 300Phase/Cycle 3/60

Other \_\_\_\_\_

## ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 39Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"

Pressure/Vacuum \_\_\_\_\_

H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

## VISUAL INSPECTION

Cleanliness ☒ GoodGaskets ☒ OKPaint ☒ Good Silver☐ Fair☐ BadBushings ☒ OKLeaks ☐ None

Other \_\_\_\_\_

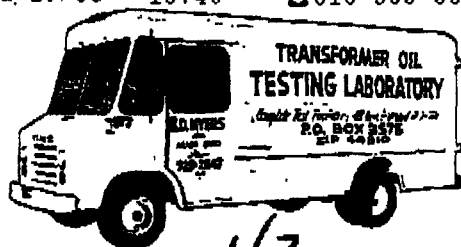
## NOTES - COMMENTS

44  
47  
46

7.75  
7.10  
25  
1  
0.25

## SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3 $\phi$  Power? ☐ NoDe-Energize? ☐ No



# Transformer consultants

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FN Date 5-5-10Customer St. Regis PaperCity Battle CreekState Mi.

### LOCATION OF TRANSFORMER

TC # 6Substation Name or Number Conveyer☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ PoleUnit Or Tag Number Angell Plant

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	39	0.05	—	—	Wht.	1.540	Clear	GOOD
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 434 ☐ Oil ☒ AskarelSerial Number 8113527Secondary Volts 480Impedance 5.63KVA Rating 1000Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level N Radiators ☒ Yes ☐ No Conservator Tank ☐ Yes ☒ No Top Valve 1"

Temperature 61 Fans ☐ Yes ☒ No Tap Changer Comp. ☐ Yes ☒ No Bottom Valve 1"

Pressure/Vacuum — H<sub>2</sub>O Cooled ☐ Yes ☒ No Bushings: ☐ Top ☒ Side Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☒ Good \_\_\_\_\_ Gaskets ☒ OK \_\_\_\_\_

Paint ☒ Good Silver ☐ Fair ☐ Bad Bushings ☒ OK \_\_\_\_\_

Leaks ☒ None \_\_\_\_\_ Other \_\_\_\_\_

### NOTES - COMMENTS

41  
38  
39

8.25  
7.75  
5.0  
1  
2.0

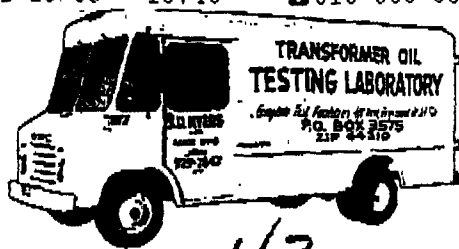
### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ No \_\_\_\_\_

Problem ReR Hoses? ☐ No \_\_\_\_\_

Problem 3Ø Power? ☐ No \_\_\_\_\_

De-Energize? ☐ No \_\_\_\_\_



WALDORF BC ST PAUL  
**TRANSFORMER**  
**consultants**

006/013

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

FIELD COPY  
**REPORT OF TRANSFORMER SURVEY**

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FNDate 5-5-76City Butte CreekState Mi.**LOCATION OF TRANSFORMER**TC # 7Substation Name or Number Power House☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

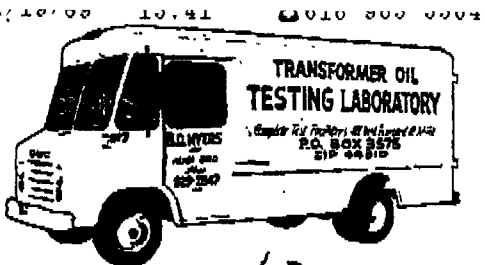
**REPORT OF TRANSFORMER LIQUID ANALYSIS**

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>38</u>	<u>0.03</u>	<u>—</u>	<u>—</u>	<u>whit.</u>	<u>1.540</u>	<u>Cl.</u>	<u>GOOD</u>
2								
3								

**NAMEPLATE INFORMATION**Manufacturer GEPrimary Volts 2400Gal. 380☐ Oil  
☒ AskarelSerial Number 8113528Secondary Volts 480Impedance 5.83KVA Rating 750Phase/Cycle 3/60

Other \_\_\_\_\_

**ADDITIONAL EQUIPMENT**Liquid Level N Radiators ☒ Yes ☐ No Conservator Tank ☐ Yes ☒ No Top Valve 1"Temperature 43 Fans ☐ Yes ☒ No Tap Changer Comp. ☐ Yes ☒ No Bottom Valve 1"Pressure/Vacuum \_\_\_\_\_ H<sub>2</sub>O Cooled ☐ Yes ☒ No Bushings ☐ Top ☒ Side Other Access \_\_\_\_\_**VISUAL INSPECTION**Cleanliness ☒ Good \_\_\_\_\_ Gaskets ☐ OK \_\_\_\_\_Paint ☒ Good ☐ Fair ☐ Bad Bushings ☐ OK \_\_\_\_\_Leaks ☐ None slight leak from ne Other \_\_\_\_\_**NOTES - COMMENTS****SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY**Problem Park ReR? ☐ No \_\_\_\_\_Problem ReR Hoses? ☐ No \_\_\_\_\_Problem 3 $\phi$  Power? ☐ No \_\_\_\_\_De-Energize? ☐ No \_\_\_\_\_



TRANSFORMER  
consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

FIELD COPY  
REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43

Customer St. Regis Paper

Analyst FN Date 5-5-76

City Battle Creek State Mi.

LOCATION OF TRANSFORMER

TC # 12

Substation Name or Number Coating Room Sub

☒ Indoor

☐ Outdoor

☐ Roof

☒ Ground

☐ Platform

☐ Pole

Unit Or Tag Number

REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	38	0.03	—	—	Wt.	1.540	Clr.	GOOD
2								
3								

NAMEPLATE INFORMATION

Manufacturer GE

Primary Volts 2400

Gal. 115

☐ Oil

Serial Number P037219

Secondary Volts 208Y/120

Impedance 4.85

☒ Askarel

KVA Rating 200

Phase/Cycle 3/60

Other

ADDITIONAL EQUIPMENT

Liquid Level N

Radiators ☒ Yes ☐ No

Conservator Tank ☐ Yes ☒ No

Top Valve 1 plug

Temperature

Fans ☐ Yes ☒ No

Tap Changer Comp. ☐ Yes ☒ No

Bottom Valve

Pressure/Vacuum

H<sub>2</sub>O Cooled ☐ Yes ☒ No

Bushings: ☐ Top ☒ Side

Other Access

VISUAL INSPECTION

Cleanliness ☐ Good ☒ Fair ☐ Bad

Gaskets ☒ OK

Paint ☒ Good ☐ Fair ☐ Bad

Bushings ☒ OK

Leaks ☒ None

Other

NOTES — COMMENTS

36  
40  
38

8.70  
8.60  
30  
0.30

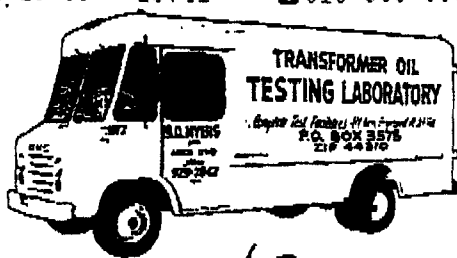
SERVICING INFORMATION — FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ No

Problem ReR Hoses? ☐ No

Problem 3ø Power? ☐ No

De-Energize? ☐ No



# Transformer consultants

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FNDate 5-5-76City Battle CreekState MI

## LOCATION OF TRANSFORMER

TC # 9Substation Name or Number Coating Sub☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ PoleUnit Or Tag Number Angell Plant

## REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>40</u>	<u>0.02</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>Clr.</u>	<u>GOOD</u>
2								
3								

## NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 380☐ Oil☒ AskarelSerial Number 8113529Secondary Volts 480Impedance 5.83KVA Rating 750Phase/Cycle 3/60

Other

## ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 39Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access

## VISUAL INSPECTION

Cleanliness ☐ Good dirtyGaskets ☒ OKPaint ☒ Good ☐ Fair ☐ BadBushings ☒ OKLeaks ☒ None

Other

## NOTES - COMMENTS

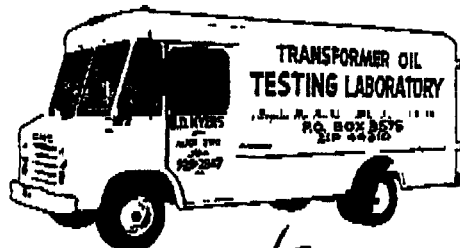
38  
42  
40

4.10  
8.90  
20  
1  
5.00

## SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3 $\phi$  Power? ☐ NoDe-Energize? ☐ No

FORM #3-101



# transformer consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FNDate 5-5-76Customer St. Regis PaperCity Battle CreekState Mi

### LOCATION OF TRANSFORMER

TC # 10Substation Name or Number Low Voltage  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>43</u>	<u>0.03</u>	<u>—</u>	<u>—</u>	<u>whit.</u>	<u>1.540</u>	<u>clear</u>	<u>GOOD</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 134☐ Oil☒ AskarelSerial Number 8037220Secondary Volts 480Impedance 4.7KVA Rating 200Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature —Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ No

Bottom Valve \_\_\_\_\_

Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☒ GoodGaskets ☐ OKPaint ☒ Good☐ Fair☐ BadBushings ☐ OKLeaks ☒ None

Other \_\_\_\_\_

### NOTES — COMMENTS

### SERVICING INFORMATION — FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No



DNR

MICHIGAN DEPARTMENT  
OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE

ATTENTION: DISPOSED REJ. ☐

1362

Failure to file this manifest under  
Section 3004 of the Michigan  
Act 306, PA 1963

Please print or type (Form designed for use on 12-inch typewriter)

Form Approved OMB No. 2000-0045

UNIFORM HAZARDOUS  
WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest  
Document No.

2. Pages

Information in the shaded areas  
is not required by Federal  
law

3. Generator's Name and Mailing Address

Champion Papers, 177 Angell St.  
Battle Creek, MI 49016

4. Generator's Phone ( ) 616 963-5511

5. Transporter 1 Company Name

S. D. Myers, Inc.

6. US EPA ID Number

D E D 0 4 4 9 4 6 1 2 7

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

S. D. Myers, Inc.  
1500 Commerce Drive  
Stow, OH 44224

10. US EPA ID Number

D E D 0 4 4 9 4 6 1 2 7

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and  
ID NUMBER)Hazard - Polychlorinated Biphenyls (PCBs) (resin,  
discs, bottles, etc)  
100 lbs. of PCBs12. Containers  
No. Type13. Total  
Quantity14. Unit  
Wt/Vol

15. Waste

16. Additional Descriptions for Materials Listed Above

17. Special Handling Instructions and Additional Information

18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by  
proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by  
highway according to applicable international and national governmental regulations, including applicable state regulations.

19. Printed/Typed Name

Signature

Month Day Year

20. Transporter 1 Acknowledgement of Receipt of Materials

21. Printed/Typed Name

Signature

Month Day Year

22. Transporter 2 Acknowledgement of Receipt of Materials

23. Printed/Typed Name

Signature

Month Day Year

24. Discrepancy Indication Space

25. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in  
Item 19

26. Printed/Typed Name

Signature

Month Day Year

GENERAL ELECTRIC COMPANY  
POWER DISTRIBUTION DIVISION      INSULATION LABORATORY  
- PITTSFIELD, MASS.

Comprehensive \_\_\_\_\_ Oil X Pyranol Testing Service Report      Sheet 1 of 2

Customer Michigan Cartan Company      Report No. T65-124  
Battle Creek, Michigan      Date 5/12/65  
 Requisition No. 390-68828, rec'd. 4/20/65      Tested By E. W. Walker  
 Date Samples Received 5/10/65, Lot #4712      Approved By S.W. Kernaghan  
All G. E. Units

Serial Number	0037219	8037220	8113527	8113528	8113529
Dielectric Strength, KV	42	32	37	35	38
Color, APHA <del>2500</del>	125	125	125	125	125
Acidity, mg. KOH/g	.02	.02	.04	.03	.03
Visual Condition	Clear, very slight sediment	Clear, slight sediment	Clear, slight sediment	Clear, very slight sediment	Clear, very slight sediment
Viscosity, SUS 37.8°C	52"	53"	53"	53"	53"
Specific Gravity 15.5/15.5°C	1.558	1.557	1.557	1.557	1.558
Water Content PPM	12	10	23	21	35
Refractive Index 25°C.	1.6140	1.6138	1.6147	1.6141	1.6142
Scavenger Content % *	.120	.118	.082	.104	.105
Resistivity ohm-cm, 100°C	$34 \times 10^9$	$37 \times 10^9$	$18 \times 10^9$	$22 \times 10^9$	$29 \times 10^9$
Free Chlorides PPM	.1	.1	.1	.1	.1
Pour Point °C					
Interfacial Tension, 25°C	LIGHTING #3 SUB	LOW LIFT PUMP STA. #2 SUB	#2 TRANS POWER #1 SUB	POWER #1 SUB	POWER #3 SUB
Pwr. Factor %, 25°C 100°C					
Corrosive Sulfur ASTM D1275					
Organic Contamination Qualitative	Slight	Slight	Slight	Slight	Slight
	1325122	1320100	1359100	1341122	1340122

Based on the samples and information submitted, the following recommendations are made.

**Customer: (2)**

79 E. Fountain St.  
Battle Creek, Mich.  
Att. Mr. E. Decker  
Kernaghan  
43-240 (Req. enc.)  
HC Kelly 34-346  
SW Kernaghan 8-510  
EW Walker 8-403(2)  
File

These Pyranols are in suitable condition for continued use but the Pyranol in units #8113527 and 8113530 are somewhat higher in acid content and lower in scavenger content than the others.

These units should be re-sampled and tested after six months, and if the acidity continues to rise and/or the scavenger content is further depleted, corrective action should be taken.

0137013

GENERAL ELECTRIC COMPANY  
POWER DISTRIBUTION DIVISION      INSULATION LABORATORY  
PITTSFIELD, MASS.

Sheet 2 of 2

\_\_\_\_\_ Oil   X   Pyranol Testing Service Report

Customer Michigan Carton Company  
Battle Creek, Mich.

Report No. T65-124

Requisition No. \_\_\_\_\_

Date \_\_\_\_\_

Date Samples Received \_\_\_\_\_

Tested By \_\_\_\_\_

Approved By \_\_\_\_\_

Serial Number	8413530	8037218			
Dielectric Strength, KV	35	39			
Color, APHA ASTM	125	90			
Acidity, mg. KOH/g	.04	.02			
Visual Condition	Clear, very slight sediment	Clear, very slight sediment			
viscosity, SUS 37.8°C	53"	52"			
Specific Gravity 15.5/15.5°C	1.560	1.557			
Water Content PPM	14	19			
Refractive Index 25°C.	1.6143	1.6141			
Scavenger Content % *	.078	.100			
Resistivity ohm-cm, 100°C	18x10 <sup>9</sup>	42x10 <sup>9</sup>			
Free Chlorides PPM	.1-	.1-			
Pour Point °C					
Interfacial Tension, 25°C	#1 TRANS	LIGHTING			
Pwr. Factor %, 25°C	#2 SUB.	#2 SUB.			
100°C					
Corrosive Sulfur ASTM D1275	Slight	Slight			
Organic Contamination Qualitative					
	1347100	1340100			

Based on the samples and information submitted, the following recommendations are made.



Industry Services Engineering  
General Electric Company  
5700 Grand Street, NW, Grand Rapids, MI 49504  
tel 616-441-2019

May 19, 1988

Quotation No. 389E00165

Waldorf Corporation  
177 Angell Street  
Battle Creek, Michigan 49016

Attention: Mr. Steve Weers

Reference: PCB Transformer Disposal

Gentlemen:

In response to your request, the General Electric Company, Industrial Sales and Services Division, Grand Rapids Office, is pleased to submit our proposal to provide services at your Battle Creek facility as follows:

A. Remove and dispose of one (1) 200 KVA PCB transformer.

ISSD will provide technical supervision, craft labor, tools, and equipment required to complete the removal work.

A qualified field engineer will supervise technical and contractor personnel for the overall project.

A PCB certified supervisor will direct the actual PCB material handling and disposal.

WORKSCOPE:

Remove and dispose of the following transformer:

A. 200 KVA - S/N 8037220.

Work on the transformer will include the following:

1. Disconnect HV and LV connections as necessary.
2. Remove the transformer.
3. Decommission and dispose of PCB liquid and transformer carcass.
4. Dispose of any other waste we generate while on-site pertaining to this portion of the work.
5. Provide disposal certificates and signed manifests to show proper disposal after completion of the job.

#### CUSTOMER RESPONSIBILITIES:

1. The customer shall provide free and safe access to the job site in order to perform this work.
2. All scheduling and switching shall be the responsibility of the customer. The transformer must be out of service to perform this work.
3. It shall be the customer's responsibility to provide an uninterrupted flow of work and/or access to the equipment. If delays are incurred, their associated costs will be billed as extras.
4. The customer must provide reasonable, mutually agreeable access to each equipment and work area. This includes removal and restoration of any and all obstructions in order to provide a clear path for rigging out the transformer between the present location and the closest convenient place to locate a truck.
5. Provide the required EPA I.D. number and PCB item out of service date.

#### PRICE, PAYMENT AND ESCALATION:

For the afore-mentioned scope of services we are pleased to quote you  
.....\$ 9,972.00 Lot Net.

Our terms of payment are net due upon receipt of invoice.

Title shall pass on a pro-rata basis as work is completed.

The prices quoted herein are firm for a period of thirty (30) days after which they shall be subject to adjustment.

The price quoted in this proposal is contingent upon all work being performed on a straight time basis, and all work being completed by the end of 1988.

BASIS OF PROPOSAL:

1. The terms and conditions of the attached GEISS Form 487 (CS), and the attached PCB clauses, GEISS Form 487 (PCB), shall apply unless specifically stated otherwise in this proposal.
2. These units are presently owned by Waldorf Corporation and title cannot be transferred to a "middle agent" or "distributor", etc. for resale to another ultimate user.
3. Title to the toxic waste will transfer on a per event basis at the beginning of on-site work on each particular piece of equipment .

This document contains proprietary information and is submitted upon the expressed condition that the information contained herein will not be used directly or indirectly in any way detrimental to the interest of the General Electric Company.

We thank you for allowing us to be of service, and hope to be favored with your order. I am sure you will find our PCB terms to be the best available in the industry. Should any further questions arise, please do not hesitate to contact me at this office.

Sincerely;

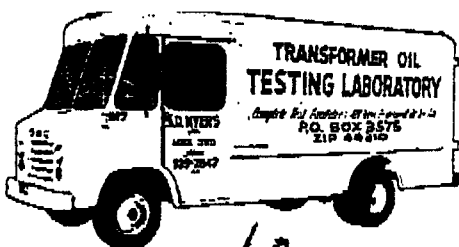


Warren J Thaler  
Area Engineer  
ISSD - Industrial.

Post-It™ brand fax transmittal memo 7671 # of pages ~~13~~ 13

To Gary Kay	From Don Opala
Co. Waldorf Corp	Co. Waldorf Corp
Dept. ST Paul	Phone #
Fax #	(66) 963-5564

13 pages



# Transformer consultants

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43

Analyst FN Date 5-5-76

Customer

City

State

St. Regis Paper  
Battle Creek Mi

### LOCATION OF TRANSFORMER

TC # 3

Substation Name or Number

☒ Indoor

☐ Outdoor

☐ Roof

☒ Ground

☐ Platform

☐ Pole

Unit Or Tag Number

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>42</u>	<u>0.02</u>	<u>—</u>	<u>—</u>	<u>WHD</u>	<u>1.54</u>	<u>Ch</u>	<u>GOOD</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer

Primary Volts

Gal.

Serial Number

Secondary Volts

Impedance

KVA Rating

Phase/Cycle

Other

West.

2400

240

YDR 4085

480

5.7

1000

3/60

### ADDITIONAL EQUIPMENT

Liquid Level

Radiators

☒ Yes ☐ No

Conservator Tank ☐ Yes ☒ No

Top Valve

Temperature

Fans

☐ Yes ☒ No

Tap Changer Comp. ☐ Yes ☒ No

Bottom Valve

Pressure/Vacuum

H<sub>2</sub>O Cooled

☐ Yes ☒ No

Bushings: ☐ Top ☒ Side

Other Access

N

31

+1/2

1"

1"

### VISUAL INSPECTION

Cleanliness

☒ Good

Gaskets

☒ OK

Paint

☒ Good

☐ Fair

☐ Bad

Bushings

☒ OK

Leaks

☒ None

Other

### NOTES - COMMENTS

44  
40  
42

7.00  
6.50  
20  
5.20

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR?

☐ No

Problem ReR Hoses?

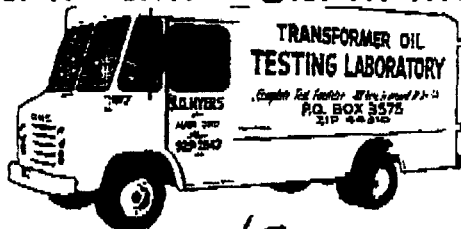
☐ No

Problem 3Ø Power?

☐ No

De-Energize?

☐ No



# WALDORF CONSULTANTS

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FN Date 5-5-86Customer St. Regis PaperCity Battle CreekState Mi

## LOCATION OF TRANSFORMER

TC # 4Substation Name or Number Conveyer  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

## REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	WT/IN/CM (Oil)	10 <sup>6</sup> OHMS/CM (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>41</u>	<u>0.045</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>Clr.</u>	<u>Good</u>
2								
3								

## NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 434☐ OilSerial Number 8113530Secondary Volts 480Impedance 5.63☒ AskarelKVA Rating 1000Phase/Cycle 3/60

Other \_\_\_\_\_

## ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 50Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Coated ☐ Yes ☒ NoBushings ☐ Top ☒ Side

Other Access \_\_\_\_\_

## VISUAL INSPECTION

Cleanliness ☒ GoodGaskets ☒ OKPaint ☒ Good Silver☐ Fair☐ BadBushings ☒ OKLeaks ☒ None

Other \_\_\_\_\_

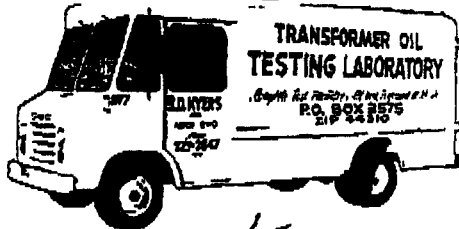
## NOTES - COMMENTS

42  
41  
40

7.50  
7.05  
45  
270

## SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3 $\phi$  Power? ☐ NoDe-Energize? ☐ No



# WALDORF CONSULTANTS

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FN Date 5-5-76City Battle Creek State Mi

### LOCATION OF TRANSFORMER

TC # 5Substation Name or Number Conveyer  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>46</u>	<u>0.025</u>	<u>—</u>	<u>—</u>	<u>Wt. 1.540</u>	<u>Cl.</u>	<u>Good</u>	<u>Good</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 209 ☐ Oil ☒ AskarelSerial Number 8037218Secondary Volts 208Y/120Impedance 4.9KVA Rating 300Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level N Radiators ☒ Yes ☐ No Conservator Tank ☐ Yes ☒ No Top Valve 1"Temperature 39 Fans ☐ Yes ☒ No Tap Changer Comp. ☐ Yes ☒ No Bottom Valve 1"Pressure/Vacuum \_\_\_\_\_ H<sub>2</sub>O Cooled ☐ Yes ☒ No Bushings: ☐ Top ☒ Side Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☐ Good ☒ Fair ☐ Bad Gaskets ☐ OK ☒ Other \_\_\_\_\_Paint ☐ Good ☒ Fair ☐ Bad Bushings ☐ OK ☒ Other \_\_\_\_\_Leaks ☐ None ☒ Fair ☐ Bad Other \_\_\_\_\_

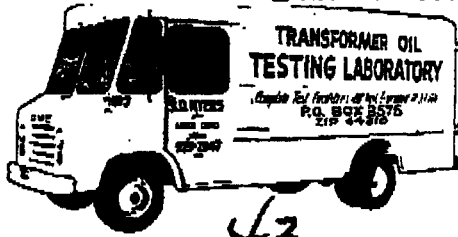
### NOTES - COMMENTS

44  
47  
46

7.75  
7.10  
2.5  
0.25

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ No ☒ YesProblem ReR Hoses? ☐ No ☒ YesProblem 3Ø Power? ☐ No ☒ YesDe-Energize? ☐ No ☒ Yes



# Waldorf BC consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FNDate 5-5-86City Battle CreekState Mi.

### LOCATION OF TRANSFORMER

TC # 6Substation Name or Number Conveyer  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1.	<u>39</u>	<u>0.05</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>OK</u>	<u>GOOD</u>
2.								
3.								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 434 ☐ OilSerial Number 8113527Secondary Volts 480Impedance 5.63 ☒ AskarelKVA Rating 1000Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level N Radiators ☒ Yes ☐ No Conservator Tank ☐ Yes ☒ No Top Valve 1"Temperature 61 Fans ☐ Yes ☒ No Tap Changer Comp. ☐ Yes ☒ No Bottom Valve 1"Pressure/Vacuum — H<sub>2</sub>O Cooled ☐ Yes ☒ No Bushings: ☐ Top ☒ Side Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☒ Good \_\_\_\_\_ Gaskets ☒ OK \_\_\_\_\_Paint ☒ Good Silver ☐ Fair ☐ Bad Bushings ☐ OK \_\_\_\_\_Leaks ☒ None \_\_\_\_\_ Other \_\_\_\_\_

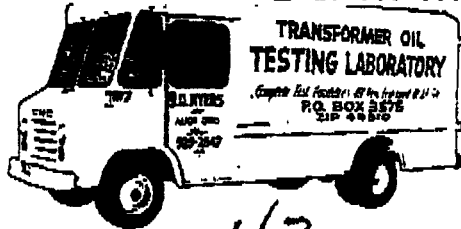
### NOTES - COMMENTS

41  
38  
39

8.25  
7.75  
50  
1  
0.0

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ No \_\_\_\_\_Problem ReR Hoses? ☐ No \_\_\_\_\_Problem 3Ø Power? ☐ No \_\_\_\_\_De-Energize? ☐ No \_\_\_\_\_



**WALDORF BC**  
**consultants**

Div. of S. D. MYERS, INC.  
 P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

**FIELD COPY**  
**REPORT OF TRANSFORMER SURVEY**

Mobile Test Laboratory No. 43

Customer St. Regis Paper

Analyst FN

Date 5-5-76

City Bettles Creek

State Mi.

**LOCATION OF TRANSFORMER**

TC # 17

Substation Name or Number Power House

☒ Indoor

☐ Outdoor

☐ Roof

☒ Ground

☐ Platform

☐ Pole

Unit Or Tag Number Angell Pkt.

**REPORT OF TRANSFORMER LIQUID ANALYSIS**

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Viscosity	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	38	0.03	—	—	wht. 1.540	Cl.		GOOD
2								
3								

**NAMEPLATE INFORMATION**

Manufacturer GE

Primary Volts 2400

Gal. 380

☐ Oil

☒ Askarel

Serial Number 8113528

Secondary Volts 480

Impedance 5.83

KVA Rating 750

Phase/Cycle 3/60

Other

**ADDITIONAL EQUIPMENT**

Liquid Level N Radiators ☒ Yes ☐ No Conservator Tank ☐ Yes ☒ No Top Valve 1"

Temperature 43 Fans ☐ Yes ☒ No Tap Changer Comp. ☐ Yes ☒ No Bottom Valve 1"

Pressure/Vacuum — H<sub>2</sub>O Cooled ☐ Yes ☒ No Bushings: ☐ Top ☒ Side Other Access

**VISUAL INSPECTION**

Cleanliness ☒ Good ☐ Fair ☐ Bad Gaskets ☐ OK

Paint ☒ Good ☐ Fair ☐ Bad Bushings ☐ OK

Leaks ☐ None slight leak from ne Other

**NOTES - COMMENTS**

38  
38  
38  
38

8.60  
8.30  
30  
8.30

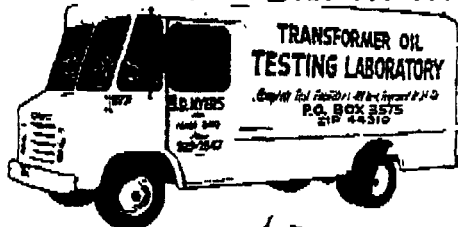
**SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY**

Problem Park ReR? ☐ No

Problem ReR Hoses? ☐ No

Problem 3 $\phi$  Power? ☐ No

De-Energize? ☐ No



# Waldorf BC consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FNDate 5-5-76City Battle Creek State Mi.

### LOCATION OF TRANSFORMER

TC # 12Substation Name or Number Coating Room Sub☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>38</u>	<u>0.03</u>	<u>—</u>	<u>—</u>	<u>Wt.</u>	<u>1.540</u>	<u>Clr.</u>	<u>Good</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 115 ☐ Oil ☒ AskarelSerial Number P037219Secondary Volts 208Y/120Impedance 4.85KVA Rating 200Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level N Radiators ☒ Yes ☐ No Conservator Tank ☐ Yes ☒ No Top Valve 1 plug  
 Temperature \_\_\_\_\_ Fans ☐ Yes ☒ No Tap Changer Comp. ☐ Yes ☒ No Bottom Valve \_\_\_\_\_  
 Pressure/Vacuum \_\_\_\_\_ H<sub>2</sub>O Cooled ☐ Yes ☒ No Bushings: ☐ Top ☒ Side Other Access \_\_\_\_\_

### VISUAL INSPECTION

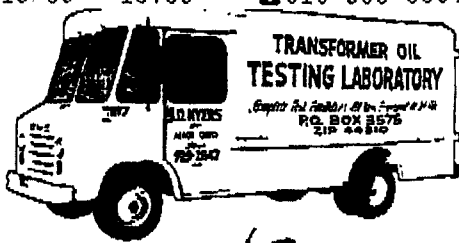
Cleanliness ☐ Good dirty Gaskets ☒ OK \_\_\_\_\_  
 Paint ☒ Good ☐ Fair ☐ Bad Bushings ☒ OK \_\_\_\_\_  
 Leaks ☒ None \_\_\_\_\_ Other \_\_\_\_\_

### NOTES - COMMENTS

36  
40  
38  
8.70  
8.60  
30  
8.30

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ No \_\_\_\_\_  
 Problem ReR Hoses? ☐ No \_\_\_\_\_  
 Problem 3 $\phi$  Power? ☐ No \_\_\_\_\_  
 De-Energize? ☐ No \_\_\_\_\_



# TRANSFORMER consultants

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FWDate 5-5-76City Battle CreekState Mich.

## LOCATION OF TRANSFORMER

TC # 9Substation Name or Number Coating Sub  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

## REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>40</u>	<u>0.02</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>Ch.</u>	<u>GOOD</u>
2								
3								

## NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 380☐ Oil☒ AskarelSerial Number 8113529Secondary Volts 480Impedance 5.83KVA Rating 750Phase/Cycle 3/60

Other \_\_\_\_\_

## ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 39Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

## VISUAL INSPECTION

Cleanliness ☐ Good dirtyGaskets ☒ OKPaint ☒ Good ☐ Fair ☐ BadBushings ☒ OKLeaks ☒ None

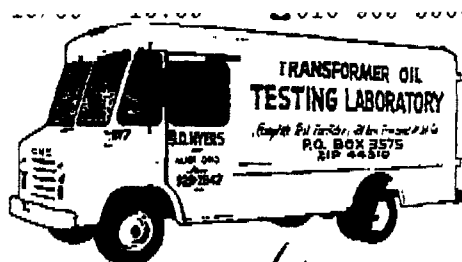
Other \_\_\_\_\_

## NOTES - COMMENTS

3942409.108.902015.83

## SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No



# Transformer consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FNDate 5-5-76City Battle CreekState Mi

### LOCATION OF TRANSFORMER

TC # 10Substation Name or Number Low Voltage  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>43</u>	<u>0.03</u>	<u>—</u>	<u>—</u>	<u>whit.</u>	<u>1.540</u>	<u>OK</u>	<u>GOOD</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 134☐ Oil☒ AskarelSerial Number 8037220Secondary Volts 480Impedance 4.7KVA Rating 200Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"

Temperature \_\_\_\_\_

Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"

Pressure/Vacuum \_\_\_\_\_

H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☒ GoodGaskets ☐ OKPaint ☒ Good☐ Fair☐ BadBushings ☐ OKLeaks ☒ None

Other \_\_\_\_\_

### NOTES - COMMENTS

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3/4 Power? ☐ NoDe-Energize? ☐ No



**MICHIGAN DEPARTMENT  
OF NATURAL RESOURCES**

DO NOT WRITE IN THIS SPACE

ATT. ☐ DIS. ☐ REJ. ☐

Regulations under authority of Act 45, PA 1979, as amended and Act 136, PA 1969

Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, PA, 1969

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved OMB No. 2000-0404 Pages 1/31

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.		Manifest Document No.		2. Page 1 of		Information in the shaded areas is not required by Federal law.					
3. Generator's Name and Mailing Address <b>Champion Papers 177 Angell St. Battle Creek, MI 49016</b>						A. State Manifest Document Number <b>MI 0468498</b>							
4. Generator's Phone (616) <b>963-5511</b>						B. State Generator's ID							
5. Transporter 1 Company Name <b>S. D. Myers, Inc.</b>						C. State Transporter's ID							
6. US EPA ID Number <b>0 8 1 5 6 4 4 0 4 4 6 1 2 7</b>						D. Transporter's Phone							
7. Transporter 2 Company Name						E. State Transporter's ID							
8. US EPA ID Number						F. Transporter's Phone							
9. Designated Facility Name and Site Address <b>S. D. Myers, Inc. 1500 Commerce Drive Stow, OH 44224</b>						G. State Facility's ID							
10. US EPA ID Number <b>0 8 1 5 6 4 4 0 4 4 6 1 2 7</b>						H. Facility's Phone							
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER) <b>HM</b>						12. Containers		13. Total Quantity		14. Unit		I. Waste	
						No. Type		Quantity		Unit		No. N/H	
a. <b>X</b> <b>Waste - Polychlorinated Biphenyl SOLIDS (rags, dirt, bottles, etc)</b> <b>80, ORN-E, DN1315</b>						1							
b.													
c.													
d.													
J. Additional Descriptions for Materials Listed Above						K. Handling Codes for Wastes Listed Above							
15. Special Handling Instructions and Additional Information													
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations, including applicable state regulations.													
Printed/Typed Name						Signature						Date Month Day Year	
17. Transporter 1 Acknowledgement of Receipt of Materials						Signature						Date Month Day Year	
Printed/Typed Name <b>S. D. Myers, Inc.</b>													
18. Transporter 2 Acknowledgement or Receipt of Materials						Signature						Date Month Day Year	
Printed/Typed Name													
19. Discrepancy Indication Space													
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.													
Printed/Typed Name						Signature						Date Month Day Year	

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-252-4708 OR OUT OF STATE AT 1-800-373-7680 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

<b>UNIFORM HAZARDOUS WASTE IDENTIFICATION</b>		Generator's Name and Mailing Address <b>Champion Paper Mills, Inc. Belle Creek, MI 49015</b>		Generator's EPA ID No. <b>MI 0011</b>		Manifest No. <b>MI 0011</b>	
Generator's Phone (Area Code) <b>516</b> <b>962-5511</b>		Generator's Name and Mailing Address <b>S. D. Myers, Inc. 1500 Commerce Drive Stuy, OH 44221</b>		Generator's EPA ID Number <b>OH 0011</b>		Manifest No. <b>OH 0011</b>	
Transporter's Company Name <b>S. D. Myers, Inc.</b>		Transporter's EPA ID Number <b>OH 0011</b>		Transporter's Phone (Area Code) <b>516</b> <b>962-5511</b>		Manifest No. <b>OH 0011</b>	
Designated Facility Name and Site Address <b>S. D. Myers, Inc. 1500 Commerce Drive Stuy, OH 44221</b>		Designated Facility's EPA ID Number <b>OH 0011</b>		Designated Facility's Phone (Area Code) <b>516</b> <b>962-5511</b>		Manifest No. <b>OH 0011</b>	
US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number) <b>HAZARDOUS WASTE (POLYMERIZATION RESIDUE) (Hazard Class 9) (ID Number 1500)</b>		12 Containers <b>1</b>		13 Total Weight (Lbs.) <b>1500</b>		14 Total Volume (Gals.) <b>1500</b>	
15 Special Handling Instructions and Additional Information <b>HAZARDOUS WASTE (POLYMERIZATION RESIDUE) (Hazard Class 9) (ID Number 1500)</b>		16 Containers <b>1</b>		17 Total Weight (Lbs.) <b>1500</b>		18 Total Volume (Gals.) <b>1500</b>	
19. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway, according to applicable international and national governmental regulations, including applicable state regulations.		Signature <b>S. D. Myers, Inc.</b>		Date <b>10/1/81</b>		Month/Day/Year <b>10/1/81</b>	
20. Facility Owner/Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.		Signature <b>S. D. Myers, Inc.</b>		Date <b>10/1/81</b>		Month/Day/Year <b>10/1/81</b>	
21. Discrepancy Indication Space		Signature <b>S. D. Myers, Inc.</b>		Date <b>10/1/81</b>		Month/Day/Year <b>10/1/81</b>	
22. Facility Owner/Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.		Signature <b>S. D. Myers, Inc.</b>		Date <b>10/1/81</b>		Month/Day/Year <b>10/1/81</b>	

GENERAL ELECTRIC COMPANY  
POWER DISTRIBUTION DIVISION      INSULATION LABORATORY  
- PITTSFIELD, MASS.

Comprehensive Oil X Pyranol Testing Service Report      Sheet 1 of 2

Customer Michigan Carton Company

Battle Creek, Michigan

Requisition No. 390-68828, rec'd. 4/20/65

Date Samples Received 5/10/65, lot #4712

All G. E. Units

Report No. T65-124

Date 5/12/65

Tested By E. W. Walker

Approved By S.W. Kernagh

Serial Number	8037219	8037220	8113527	8113528	8113529
Dielectric Strength, KV	42	32	37	35	38
Color, APHA <del>2854</del>	125	125	125	125	125
Acidity, mg. KOH/g	.02	.02	.04	.03	.03
Visual Condition	Clear, very slight sediment	Clear, slight sediment	Clear, slight sediment	Clear, very slight sediment	Clear, very slight sediment
Viscosity, SUS 37.8°C	52"	53"	53"	53"	53"
Specific Gravity 15.5/15.5°C	1.558	1.557	1.557	1.557	1.558
Water Content PPM	12	10	43	21	35
Refractive Index 25°C.	1.6140	1.6138	1.6142	1.6141	1.6142
Scavenger Content % *	.120	.118	.082	.104	.105
Resistivity ohm-cm, 100°C	34x10 <sup>9</sup>	37x10 <sup>9</sup>	18x10 <sup>9</sup>	22x10 <sup>9</sup>	29x10 <sup>9</sup>
Free Chlorides PPM	.1	.1-	.1-	.1-	.1-
Pour Point °C					
Interfacial Tension, 25°C	LIGHTNING #3 SUB	LOW LIFT #2 TRANS PUMP STA. #2 SUB		POWER #1 SUB	POWER #3 SUB
Pwr. Factor %, 25°C					
100°C					
Corrosive Sulfur ASTM D1275					
Organic Contamination Qualitative	Slight	Slight	Slight	Slight	Slight
	1325122	1320100	1359100	1341122	1340122

Based on the samples and information submitted, the following recommendations are made.

Customer: (2)

79 E. Fountain St.  
Battle Creek, Mich.  
Att. Mr. H. Decker  
RM Lesperance

43-240(Req. enc.)  
EC Kelly 34-346  
SW Kernaghan 8-510  
EW Walker 8-403(2)  
File

These Pyranols are in suitable condition for continued use but the Pyranol in units #8113527 and 8113530 are somewhat higher in acid content and lower in scavenger content than the others.

These units should be re-sampled and tested after six months, and if the acidity continues to rise and/or the scavenger content is further depleted, corrective action should be taken.

GENERAL ELECTRIC COMPANY  
POWER DISTRIBUTION DIVISION INSULATION LABORATORY  
PITTSFIELD, MASS.

Sheet 2 of 2

\_\_\_\_\_ Oil X Pyranol Testing Service Report

Customer Michigan Carton Company  
Battle Creek, Mich.

Report No. T65-124

Requisition No. \_\_\_\_\_

Date \_\_\_\_\_

Date Samples Received \_\_\_\_\_

Tested By \_\_\_\_\_

Approved By \_\_\_\_\_

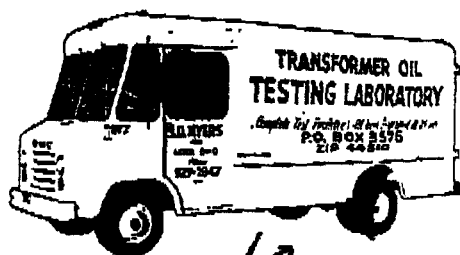
Serial Number	8037218	8037218		
Dielectric Strength, KV	35	39		
Color, APHA ASTM	125	90		
Acidity, mg. KOH/g	.04	.02		
Visual Condition	Clear, very slight sediment	Clear, very slight sediment		
Viscosity, SUS 37.8°C	53"	52"		
Specific Gravity 15.5/15.5°C	1.560	1.557		
Water Content PPM	14	19		
Refractive Index 25°C.	1.6143	1.6141		
Scavenger Content % *	.078	.100		
Resistivity ohm-cm, 100°C	$18 \times 10^9$	$42 \times 10^9$		
Free Chlorides PPM	.1-	.1-		
Pour Point °C				
Interfacial Tension, 25°C	#1 TRANS #2 SUB.	LIGHTING #2 SUB.		
Pwr. Factor %, 25°C				
Corrosive Sulfur ASTM D1275	slight	slight		
Organic Contamination Qualitative				
	1347100	1340100		

Based on the samples and information submitted, the following recommendations are made.

Post-It™ brand fax transmittal memo 7671 # of pages ~~9~~ 13

To Gary Kay	From Don Opala
Co Waldorf Corp	Co Waldorf Corp
Dept ST Paul	Phone #
Fax #	(66) 963-5564

13 pages



# transformer consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FWDate 5-5-76Customer St. Regis PaperCity Battle CreekState Mi

### LOCATION OF TRANSFORMER

TC # 3Substation Name or Number Angell Pkt.☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>42</u>	<u>0.02</u>	<u>—</u>	<u>—</u>	<u>WHD</u>	<u>1.54</u>	<u>Clr</u>	<u>GOOD</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer West.Primary Volts 2400Gel. 240☐ Oil ☒ AskarelSerial Number YDR 4085Secondary Volts 480Impedance 5.6KVA Rating 1000Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 31Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum +1/2H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☒ GoodGaskets ☒ OKPaint ☒ Good☐ Fair☐ BadBushings ☒ OKLeaks ☒ None

Other \_\_\_\_\_

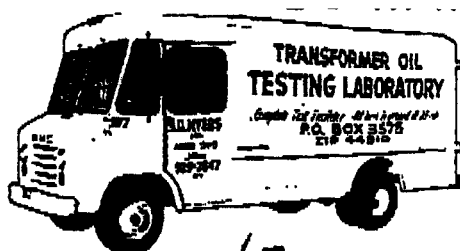
### NOTES - COMMENTS

44  
40  
42

7.00  
6.80  
20  
220

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3ø Power? ☐ NoDe-Energize? ☐ No



# W. H. Myers Consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FNDate 5-5-76Customer St. Regis PaperCity Battle CreekState Mi.

### LOCATION OF TRANSFORMER

TC # 4Substation Name or Number ConveyanAngel Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>41</u>	<u>0.045</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>Clear</u>	<u>Good</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 434☐ Oil☒ AskarelSerial Number 8113530Secondary Volts 480Impedance 5.63KVA Rating 1000Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 50Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

### VISUAL INSPECTION

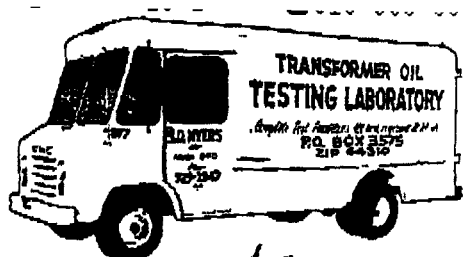
Cleanliness ☒ GoodGaskets ☒ OKPaint ☒ Good Silver☐ Fair☐ BadBushings ☒ OKLeaks ☒ None

Other \_\_\_\_\_

### NOTES - COMMENTS

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No



# W. H. Myers

## consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

### FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FNDate 5-5-76Customer St. Regis PaperCity Battle CreekState Mich

#### LOCATION OF TRANSFORMER

TC # 5Substation Name or Number Conveyer  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

#### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>4.6</u>	<u>0.025</u>	<u>—</u>	<u>—</u>	<u>Wh. 1.540</u>	<u>Ch.</u>	<u>Good</u>	
2								
3								

#### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 209☐ Oil☒ AskarelSerial Number 8037218Secondary Volts 208V/120Impedance 4.9KVA Rating 300Phase/Cycle 3/60

Other \_\_\_\_\_

#### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 39Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

#### VISUAL INSPECTION

Cleanliness ☐ Good☒ FairGaskets ☐ OK☒ BadPaint ☐ Good☒ Silver☐ Fair☐ BadBushings ☐ OK☒ BadLeaks ☐ None☒ Other

Other \_\_\_\_\_

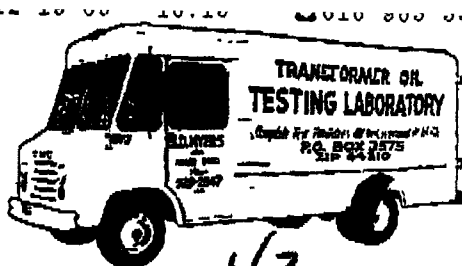
#### NOTES - COMMENTS

44  
47  
46

7.75  
7.50  
—  
—  
—  
0.25

#### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No



WALDORF DC 777 ST. FALL  
**Waldorf DC Consultants**

005/013

Div. of S. D. MYERS, INC.  
 P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

**FIELD COPY  
 REPORT OF TRANSFORMER SURVEY**

Mobile Test Laboratory No. 43Analyst FWDate 5-5-76Customer St. Regis PaperCity Battle CreekState Mi.**LOCATION OF TRANSFORMER**TC # 6Substation Name or Number ConveyerAngell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

**REPORT OF TRANSFORMER LIQUID ANALYSIS**

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1.	<u>39</u>	<u>0.05</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>Clear</u>	<u>GOOD</u>
2.								
3.								

Manufacturer GESerial Number 8113527KVA Rating 1000**NAMEPLATE INFORMATION**Primary Volts 2400Secondary Volts 480Phase/Cycle 3/60Gal. 434Impedance 5.63

Other \_\_\_\_\_

☐ Oil☒ Askarel**ADDITIONAL EQUIPMENT**Liquid Level NTemperature 61Pressure/Vacuum —Radiators ☒ Yes ☐ NoFans ☐ Yes ☒ NoH<sub>2</sub>O Cooled ☐ Yes ☒ NoConservator Tank ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBushings: ☐ Top ☒ SideTop Valve 1"Bottom Valve 1"

Other Access \_\_\_\_\_

**VISUAL INSPECTION**Cleanliness ☒ GoodPaint ☒ Good SilverLeaks ☒ NoneGaskets ☒ OKBushings ☒ OK

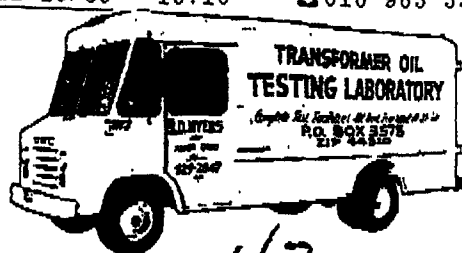
Other \_\_\_\_\_

**NOTES - COMMENTS**

41  
38  
39

8.25  
7.75  
50  
1  
250

**SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY**Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No



# Waldorf BC Consultants

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst PNDate 5-5-76City Bettlo CreekState Mi.

### LOCATION OF TRANSFORMER

TC # 7Substation Name or Number Power House☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>38</u>	<u>0.03</u>	<u>—</u>	<u>—</u>	<u>wht. 1.540</u>	<u>Cl.</u>	<u>Good</u>	
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 380☐ Oil☒ AskarelSerial Number 8113528Secondary Volts 480Impedance 5.83KVA Rating 750Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 43Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"

Pressure/Vacuum \_\_\_\_\_

H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

### VISUAL INSPECTION

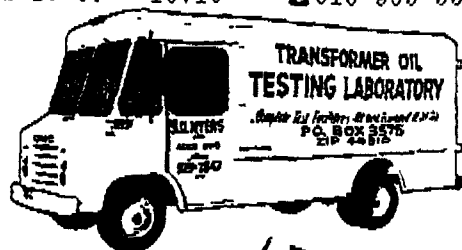
Cleanliness ☒ GoodGaskets ☐ OKPaint ☒ Good☐ Fair☐ BadBushings ☐ OKLeaks ☐ Noneslight leak from one  
new radiator

Other \_\_\_\_\_

### NOTES - COMMENTS

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3 $\phi$  Power? ☐ NoDe-Energize? ☐ No



# Waldorf BC Consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FNDate 5-5-76Customer St. Regis PaperCity Bottle CreekState Mn.

### LOCATION OF TRANSFORMER

TC # 12Substation Name or Number Coating Room Sub☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>38</u>	<u>0.03</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>Clr.</u>	<u>GOOD</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 115☐ Oil ☒ AskarelSerial Number 8037219Secondary Volts 208Y/120Impedance 4.85KVA Rating 200Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1 plug

Temperature \_\_\_\_\_

Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ No

Bottom Valve \_\_\_\_\_

Pressure/Vacuum \_\_\_\_\_

H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☐ Good dirtyGaskets ☒ OKPaint ☒ Good ☐ Fair ☐ BadBushings ☒ OKLeaks ☒ None

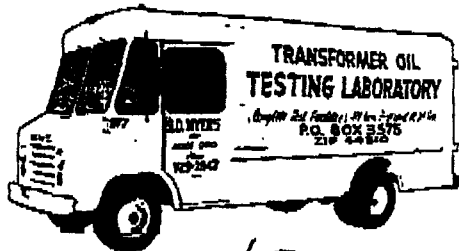
Other \_\_\_\_\_

### NOTES - COMMENTS

3640388.708.6030.030

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No



# transformer consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FNDate 5-5-76Customer St. Regis PaperCity Battle CreekState MI

### LOCATION OF TRANSFORMER

TC # 9Substation Name or Number Coating SubAngell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ PoleUnit Or Tag Number                     

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>40</u>	<u>0.02</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>Clr.</u>	<u>GOOD</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 380☐ Oil☒ AskarelSerial Number 8113529Secondary Volts 480Impedance 5.83KVA Rating 750Phase/Cycle 3/60Other                     

### ADDITIONAL EQUIPMENT

Liquid Level N Radiators ☒ Yes ☐ No Conservator Tank ☐ Yes ☒ No Top Valve 1"  
 Temperature 39 Fans ☐ Yes ☒ No Tap Changer Comp. ☐ Yes ☒ No Bottom Valve 1"  
 Pressure/Vacuum — H<sub>2</sub>O Cooled ☐ Yes ☒ No Bushings: ☐ Top ☒ Side Other Access                     

### VISUAL INSPECTION

Cleanliness ☐ Good dirty Gaskets ☐ OK                       
 Paint ☒ Good ☐ Fair ☐ Bad Bushings ☐ OK                       
 Leaks ☒ None                      Other                     

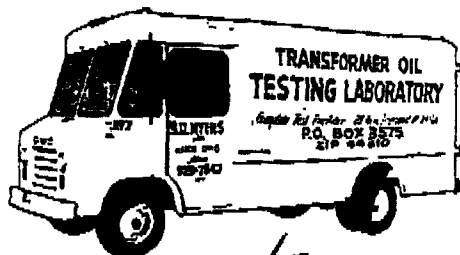
### NOTES - COMMENTS

38  
42  
40

9.10  
8.90  
20  
1  
.520

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ No                     Problem ReR Hoses? ☐ No                     Problem 3ø Power? ☐ No                     De-Energize? ☐ No



Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

FIELD COPY  
REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FNDate 5-5-76Customer St. Regis PaperCity Battle CreekState Mich

## LOCATION OF TRANSFORMER

TC # 10Substation Name or Number Low Voltage  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

## REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>43</u>	<u>0.03</u>	<u>—</u>	<u>—</u>	<u>whit.</u>	<u>1.540</u>	<u>clear</u>	<u>GOOD</u>
2								
3								

## NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 134☐ Oil☒ AskarelSerial Number 8037220Secondary Volts 480Impedance 4.7KVA Rating 200Phase/Cycle 3/60

Other \_\_\_\_\_

## ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"

Temperature \_\_\_\_\_

Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ No

Bottom Valve \_\_\_\_\_

Pressure/Vacuum \_\_\_\_\_

H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

## VISUAL INSPECTION

Cleanliness ☒ GoodGaskets ☐ OKPaint ☒ Good☐ Fair☐ BadBushings ☐ OKLeaks ☒ None

Other \_\_\_\_\_

## NOTES - COMMENTS

## SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NnProblem ReR noses? ☐ NnProblem 3 $\phi$  Power? ☐ NoDe-Energize? ☐ No





GENERAL ELECTRIC COMPANY  
POWER DISTRIBUTION DIVISION      INSULATION LABORATORY  
PITTSFIELD, MASS.

Comprehensive \_\_\_\_\_ Oil X Pyranol Testing Service Report      Sheet 1 of 2

Customer Michigan Carton Company

Report No. T65-124

Battle Creek, Michigan

Date 5/12/65

Requisition No. 390-68828, rec'd, 4/20/65

Tested By E. W. Walker

Date Samples Received 5/10/65, Lot #4712

Approved By S.W. Kernaghan

All G. E. Units

Serial Number	8037219	8037220	8113527	8113528	8113529
Dielectric Strength, KV	42	32	37	35	38
Color, APHA <del>3000</del>	125	125	125	125	125
Acidity, mg. KOH/g	.02	.02	.04	.03	.03
Visual Condition	Clear, very slight sediment	Clear, slight sediment	Clear, slight sediment	Clear, very slight sediment	Clear, ver slight sediment
Viscosity, SUS 37.8°C	52"	53"	53"	53"	53"
Specific Gravity 15.5/15.5°C	1.558	1.557	1.557	1.557	1.558
Water Content PPM	12	10	23	21	35
Refractive Index 25°C.	1.6140	1.6138	1.6142	1.6141	1.6142
Scavenger Content % *	.120	.118	.082	.104	.105
Resistivity ohm-cm, 100°C	<del>34x10<sup>9</sup></del>	<del>37x10<sup>9</sup></del>	<del>18x10<sup>9</sup></del>	<del>22x10<sup>9</sup></del>	<del>29x10<sup>9</sup></del>
Free Chlorides PPM	.1	.1	.1	.1	.1
Pour Point °C					
Interfacial Tension, 25°C	LIGHTNING #3 SUB	LOW LIFT PUMP STA. #2 SUB	#2 TRANS	POWER #1 SUB	POWER #3 SUB
Pwr. Factor %, 25°C					
100°C					
Corrosive Sulfur ASTM D1275	*Scavenger is of the D50P18 Variety				
Organic Contamination Qualitative	Slight	Slight	Slight	Slight	Slight
	1325122	1320100	1359100	1341122	1340122

Based on the samples and information submitted, the following recommendations are made.

Customer: (2)

79 E. Fountain St.  
Battle Creek, Mich.  
Att. Mr. H. Decker  
RM Lesperance  
43-240 (Reg. enc.)  
HC Kelly 34-346  
SW Kernaghan 8-510  
EW Walker 8-403(2)  
File

These Pyranols are in suitable condition for continued use but the Pyranol in units #8113527 and 8113530 are somewhat higher in acid content and lower in scavenger content than the others.

These units should be re-sampled and tested after six months, and if the acidity continues to rise and/or the scavenger content is further depleted, corrective action should be taken.

GENERAL ELECTRIC COMPANY  
POWER DISTRIBUTION DIVISION INSULATION LABORATORY  
PITTSFIELD, MASS.

Sheet 2 of 2

Oil X Pyranol Testing Service Report

Customer Michigan Carton Company  
Battle Creek, Mich.

Report No. T65-124

Requisition No. \_\_\_\_\_

Date \_\_\_\_\_

Date Samples Received \_\_\_\_\_

Tested By \_\_\_\_\_

Approved By \_\_\_\_\_

Serial Number	8113330	8037218		
Dielectric Strength, KV	35	39		
Color, APHA <del>ASTM</del>	125	90		
Acidity, mg. KOH/g	.04	.02		
Visual Condition	Clear, very slight sediment	Clear, very slight sediment		
Viscosity, SUS 37.8°C	53"	52"		
Specific Gravity 15.5/15.5°C	1.560	1.557		
Water Content PPM	14	19		
Refractive Index 25°C.	1.6143	1.6141		
Scavenger Content % *	.078	.100		
Resistivity ohm-cm, 100°C	$18 \times 10^9$	$42 \times 10^9$		
Free Chlorides PPM	.1-	.1-		
Pour Point °C				
Interfacial Tension, 25°C	#1 TRANS #2 SUB.	LIGHTING #2 SUB		
Pwr. Factor %, 25°C				
Corrosive Sulfur ASTM D1275	Slight	Slight		
Organic Contamination Qualitative				
	1347100	1340100		

Based on the samples and information submitted, the following recommendations are made.

Post-It™ brand fax transmittal memo 7671		# of pages > <del>8</del> 13
To Gary Kay	From Don Opala	
Co. Waldorf Corp	Co. Waldorf Corp	
Dept. ST Paul	Phone #	
Fax #	(66) 963-5564	

12 pages

+

1 cover

# WASTE DISPOSAL MANIFEST

☐ Act 64 Waste (HAZARDOUS)

☒ Act 136 Waste

☐ Other

MI 0250457

Generator's Name <b>St. Regis Paper Company</b>		Primary Transporter's Name <b>Chemical Waste Management, Inc.</b>		Treatment, Storage or Disposal Facility <b>Chemical Waste Management, Inc.</b>	
Site Address <b>79 E. Fountain Street Battle Creek, Mich. 49016</b>		Transporter's Address <b>2041 Henry Road, Suite 400 Columbus, OH 43224</b>		Facility Address <b>P.O. Box 55 Emellee, Alabama 35459</b>	
Phone Number <b>(616) 963-5511</b>		Phone Number <b>(614) 444-2000</b>		Phone Number <b>(205) 652-9531</b>	
<p>Facility EPA ID: <b>ALD0000000000</b> State: <b>AL</b> County: <b>DADE</b> City: <b>DADE</b> Zip: <b>35459</b></p> <p>Facility Name: <b>ALD0000000000</b> State: <b>AL</b> County: <b>DADE</b> City: <b>DADE</b> Zip: <b>35459</b></p> <p>Facility Name: <b>ALD0000000000</b> State: <b>AL</b> County: <b>DADE</b> City: <b>DADE</b> Zip: <b>35459</b></p>					

IDENTIFICATION		WASTE INFORMATION		CONTAINER		FORM		TOTAL		UNITS		HAZARDOUS	
LOT NO.	U.S. D.O.T. Shipping Name (or common name if there is no D.O.T. shipping name).	D.O.T. Hazard Class	U.N./N.A. No.	Haz. Class Code	No.	Type	Pro	Liquid	Spill	Weight or Volume	Units	Waste	Number
1.	PCB Liquid (Transformer) <i>oil</i>	<i>ORW-E</i>	UN 2315	1	3	Dr.	X			<i>APPROX. 1200</i>	<i>lbs.</i>	<i>0.2481</i>	
2.	(Greater than 500 P.P.M.)												
3.													
4.													
5.													
6.													

Include Safety precautions and special handling instructions.

GENERATOR CERTIFICATION: I certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and U.S. EPA. I further certify that the information contained on the manifest is factual. I understand that the failure to accurately report all information requested by the manifest constitutes a violation of 1879 PA04 and/or 1908 PA136. I further understand that this manifest may be used in administrative and court proceedings.

HALEW'S CERTIFICATION: I certify acceptance of the above identified wastes for transportation. I further certify that I shall deliver the hazardous wastes, together with this manifest, only to the destination specified by this generator on this manifest. I understand that this manifest can be used in administrative and court proceedings.

If the shipment cannot be delivered, describe the reasons for non-delivery.

Transporter Vehicle ID No. <b>14604</b>	Generator Signature <i>Jack A. Collins</i>	Transporter Signature <i>Mark White</i>	Date Shipped <b>NOV 11 1983</b>
Subsequent Transporter Vehicle ID No.	Subsequent transporter(s) signature(s)	Date Received <b>11/18/83</b>	

TSDF CERTIFICATION: I certify receipt at this facility of the above identified wastes and that this facility is licensed to accept those wastes. I also certify that the wastes were accompanied by a manifest properly certified by both the generator and transporter and that this facility is the destination indicated on the manifest. I understand that this manifest can be used in administrative and court proceedings.

Describe any significant discrepancies between manifest and shipment.

Was a Surcharge Assessed? ☐ Yes ☒ No

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 800-292-4706 OR OUT-OF-STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 800-424-9802 24 HOURS PER DAY.

MDND 1ST COPY



INVOICE

## Chemical Waste Management, Inc.



Nº 05724

3108 Snyder-Domer Road  
Springfield, Ohio 45502  
(513) 969-8346

MO. DAY YR.

6 11 93

MANIFEST NUMBER

2 12340

Remit To:

Chemical Waste Management, Inc.  
P. O. Box 833  
Fremont, Ohio 43420

CUSTOMER P. O. #

SHIPPER (From)

GEORGE

ADDRESS

745 E. EDWARDS BLVD. CREEK

STATE

PA

COUNTY

DESTINATION (To)

Chemical Waste Management

PROCESSING SITE

ADDRESS

P.O. Box 55, TOWNE

STATE

PA

COUNTY

HM	DESCRIPTION	# OF UNITS	UNIT PRICE	AMOUNT
	WHITE PCB LIQUID FROM E. ON 7315	3 DRUMS		

INVOICE TOTAL

THIS IS TO CERTIFY THAT THE ABOVE NAMED ARTICLES ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED, AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION AND THE ENVIRONMENTAL PROTECTION AGENCY.

SIGNATURE

SPECIAL COMMENTS

LEFT  
SITESTART  
LOADEND  
UNLOADINGTOTAL  
TIME

START LOAD

AT CUSTOMER'S SITE

8:10

END LOAD

AT CUSTOMER'S SITE

9:45

TOTAL  
TIME

TRUCK

TRAILER

1604

TRACTOR

1700

DRIVER

John White

COPIES TO: Gold-Shipper / Pink-Disposal Site / Canary-Hauler / White-Hauler

# Certificate of Disposal

ISSUED TO

S.D. MYERS, INC.

STOW, OHIO

FOR

MANIFEST NO. 85-0111-S RECEIVED: 7-24-85 M# 186

The material received in the above manifest has been completely decontaminated and/or disposed of according to 40 CFR 761.10 and U.S. EPA, Region 7, regulations.

The date of final decontamination, burial, or destruction was 9-17-85

PCB

Rt. #1, Box 159  
Kingsville, Missouri  
64061

Signed: 

Name Dennis Nix

Date this certificate issued 9-24-85

Title President



**GE Industry  
Sales & Services**

Industry Services Engineering  
General Electric Company  
610 Front Street, NW, Grand Rapids, MI 49504  
616 454-6129/2319

May 19, 1988

Quotation No. 389E00165

Waldorf Corporation  
177 Angell Street  
Battle Creek, Michigan 49016

Attention: Mr. Steve Weers

Reference: PCB Transformer Disposal

Gentlemen:

In response to your request, the General Electric Company, Industrial Sales and Services Division, Grand Rapids Office, is pleased to submit our proposal to provide services at your Battle Creek facility as follows:

A. Remove and dispose of one (1) 200 KVA PCB transformer.

ISSD will provide technical supervision, craft labor, tools, and equipment required to complete the removal work.

A qualified field engineer will supervise technical and contractor personnel for the overall project.

A PCB certified supervisor will direct the actual PCB material handling and disposal.

WORKSCOPE:

Remove and dispose of the following transformer:

A. 200 KVA - S/N 8037220.

Work on the transformer will include the following:

1. Disconnect HV and LV connections as necessary.
2. Remove the transformer.
3. Decommission and dispose of PCB liquid and transformer carcass.
4. Dispose of any other waste we generate while on-site pertaining to this portion of the work.
5. Provide disposal certificates and signed manifests to show proper disposal after completion of the job.

CUSTOMER RESPONSIBILITIES:

1. The customer shall provide free and safe access to the job site in order to perform this work.
2. All scheduling and switching shall be the responsibility of the customer. The transformer must be out of service to perform this work.
3. It shall be the customer's responsibility to provide an uninterrupted flow of work and/or access to the equipment. If delays are incurred, their associated costs will be billed as extras.
4. The customer must provide reasonable, mutually agreeable access to each equipment and work area. This includes removal and restoration of any and all obstructions in order to provide a clear path for rigging out the transformer between the present location and the closest convenient place to locate a truck.
5. Provide the required EPA I.D. number and PCB item out of service date.

PRICE, PAYMENT AND ESCALATION:

For the afore-mentioned scope of services we are pleased to quote you  
.....\$ 9,972.00 Lot Net.

Our terms of payment are net due upon receipt of invoice.

Title shall pass of a pro-rata basis as work is completed.

The prices quoted herein are firm for a period of thirty (30) days after which they shall be subject to adjustment.

The price quoted in this proposal is contingent upon all work being performed on a straight time basis, and all work being completed by the end of 1988.

BASIS OF PROPOSAL:

1. The terms and conditions of the attached GEISS Form 487 (CS), and the attached PCB clauses, GEISS Form 487 (PCB), shall apply unless specifically stated otherwise in this proposal.
2. These units are presently owned by Waldorf Corporation and title cannot be transferred to a "middle agent" or "distributor", etc. for resale to another ultimate user.
3. Title to the toxic waste will transfer on a per event basis at the beginning of on-site work on each particular piece of equipment .

This document contains proprietary information and is submitted upon the expressed condition that the information contained herein will not be used directly or indirectly in any way detrimental to the interest of the General Electric Company.

We thank you for allowing us to be of service, and hope to be favored with your order. I am sure you will find our PCB terms to be the best available in the industry. Should any further questions arise, please do not hesitate to contact me at this office.

Sincerely;

*Warren J Thaler*

Warren J Thaler  
Area Engineer  
ISSD - Industrial.



## GE Industry Sales & Services

### Conditions of Sale for Services

The sale of any service and incidental goods ordered by the Customer is expressly conditioned upon the terms and conditions contained or referred to herein. Any additional or different terms and conditions set forth in the Customer's purchase order or similar communication are objected to and will not be binding upon GE Industry Sales & Services (herein called GE) unless specifically assented to in writing by GE's authorized representative. Authorization by the Customer, whether written or oral, to furnish services and incidental goods will constitute acceptance of these terms and conditions.

#### 1. SERVICE DEFINITIONS

- a. **COMPLETE INSTALLATION/MAINTENANCE/CONSTRUCTION** is any combination of planning, management, labor, tools and incidental goods to move, install, assemble, modify, repair, modernize, start-up and/or maintain equipment.
- b. **FIELD ENGINEERING** is engineering and technical guidance, advice and counsel based upon GE's current engineering, manufacturing, installation and operating practices, as related to work performed by others.
- c. **JOB MANAGEMENT** is any combination of planning, scheduling, monitoring, selection of crews, as specified in the contract documents, but does not include responsibility for supervision of labor or for the quality or acts of craft labor.
- d. **TRAINING** is an instructional course prepared and provided by personnel proficient in the subject matter.
- e. **ENGINEERING STUDY/INSPECTION/TEST** is system design and analysis of equipment or systems by competent, experienced personnel using special techniques, instruments or devices with the objective of reporting opinions or recommendations relating to the current condition and future serviceability of the equipment or system.
- f. **PCB SERVICE** is any combination of relocation, testing, containment, retrofit/refill or retrofit/replacement of PCB material.

#### 2. WARRANTY

- a. GE warrants to the Customer that goods and services sold will be free from defects in material and workmanship and will conform to any mutually agreed upon specifications. If any failure to meet this warranty appears within one year from the date of shipment of the goods or completion of the services, on the condition that GE be promptly notified in writing thereof, GE will correct any such failure by reperforming any defective portion of the services furnished and supplying conforming goods. If the contract covers complete installation, maintenance or construction, GE will correct the failure by reperforming any defective service, and either repairing or replacing (at its option) any defective goods furnished and any damage to the equipment upon which the service was performed resulting from defective service. If reperformance is not practicable, GE will furnish without charge services in an amount essentially equal to those which, in GE's sole judgement, would have been required for reperformance. If the contract covers job management, GE's sole obligation will be to replace the job manager for the balance of the job. If the contract covers training, GE's sole obligation will be to replace the assigned instructor and reperform the training.
- b. The preceding paragraph a. sets forth the exclusive remedy for all claims based on failure of, or defect in, goods or services sold hereunder, whether the failure or defect arises before or during the warranty period, and whether a claim, however instituted, is based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise. The foregoing warranty is exclusive and is in lieu of all other warranties whether written, oral, implied or statutory. AS TO ALL GOODS SOLD, NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PARTICULAR PURPOSE SHALL APPLY.

#### 3. PATENTS

- a. GE warrants that the goods sold hereunder, and any part thereof, shall be delivered free of any rightful claim of any third party for infringement of any United States patent. If notified promptly in writing and given authority, information and assistance, GE shall defend, or may settle, at its expense, any suit or proceeding against the Customer based on a claimed infringement which would result in a breach of this warranty and GE shall pay all damages and costs awarded therein against the Customer due to such breach. In case any goods are in such suit held to constitute such an infringement and the use for the purpose intended of said goods is enjoined, GE shall, at its expense and option, either procure for the Customer the right to continue using said goods, or replace same with noninfringing goods, or modify same so they become noninfringing, or remove the goods and refund the purchase price (less reasonable depreciation for any period of use) and any transportation costs separately paid by the Customer. The foregoing states the entire liability of GE for patent infringement.
- b. The preceding paragraph a. shall not apply to any goods specified by the Customer and not of GE manufacture, or manufactured to the Customer's design, or to the use of any goods furnished hereunder in conjunction with any other goods in a combination not furnished by GE as a part of the transaction. As to any such goods, or use in such combination, GE assumes no liability whatsoever for patent infringement and the Customer will hold GE harmless against any infringement claim arising therefrom.

#### 4. EXCUSABLE DELAYS

- a. GE shall not be liable for delay due to: (1) causes beyond its reasonable control, or (2) acts of God, acts of the Customer, prerequisite work by others, acts of civil or military authority, government priorities, fires, strikes or other labor disturbances, floods, epidemics, war, riot, delays in transportation or car shortages, or (3) inability to obtain, or delay in obtaining, due to causes beyond its reasonable control, suitable labor, materials, or facilities. In the event of any such delay, the time of performance shall be extended for a period equal to the time lost by reason of the delay.
- b. In the event GE is delayed by acts of the Customer or by prerequisite work by other contractors or suppliers of the Customer, GE shall be entitled to an equitable price adjustment in addition to extension of the time of performance.

#### 5. SALES AND SIMILAR TAXES

In addition to the price specified herein, the Customer shall pay, or reimburse GE for, the gross amount of any present or future sales, use, excise, value-added or other similar tax applicable to the price, sale or furnishing of any services or goods hereunder, or to their use by GE or the Customer, or the Customer shall provide GE with evidence of exemption acceptable to the taxing authorities.

#### 6. PAYMENTS AND FINANCIAL CONDITION

- a. Pro rata payments shall become due as shipments are made or as work is completed. If GE consents to delayed shipments of goods, payment shall become due on the date when GE is prepared to make shipment. All payments shall be made without set-off for claims arising out of other sales by GE.
- b. If the financial condition of the Customer at any time does not, in the judgment of GE, justify continued performance on the terms of payment previously agreed upon, GE may require full or partial payment in advance or shall be entitled to terminate the contract and receive



# GE Industry Sales & Services

## Supplemental Conditions for PCB Services

For PCB Services, the conditions contained herein shall supplement the CONDITIONS OF SALE, GEISS Form 487(CS):

### 1. DEFINITIONS

a. "PCB Service" shall mean the service described in the attached quotation or contract to the extent that such services involve PCB Material. PCB Service may include removal, disposal, repair, testing, clean-up, replacement of insulating fluids and all other activities (such as transportation, storage, etc.) incident thereto.

b. "PCB Material" shall mean the equipment or other material containing or contaminated with polychlorinated biphenyl (PCB) identified in the attached quotation or contract as well as all the parts and the contents thereof and all material used in the performance of the PCB Service which comes into contact with PCB Material.

c. "Release" shall mean with respect to the PCB Material the intentional or unintentional spilling, migration or escape of the PCB Material or any part thereof either alone or in connection with any other substance, including, but not limited to, water, air and smoke.

### 2. PCB MATERIAL TERMS

a. GE represents that it has knowledge of the requirements associated with the use, collection, handling, storage, transportation and disposal of the PCB Material; that it has experience in such use, collection, handling, storage, transportation and disposal; and that it shall have instructed its personnel, subcontractors and agents in the proper procedures to be used in the performance of PCB Service.

b. GE will perform the PCB Service in compliance with any and all federal, state and local laws and regulations pertaining thereto, including but not limited to, the regulations contained in 40 CFR Part 761; and will have obtained all licenses and permits required by law to engage in the activities necessary to perform the PCB Service.

c. GE warrants that storage, transportation and disposal of the PCB Material will be done by means of facilities and vehicles which are fully licensed by appropriate federal, state and local authorities, as required.

d. The Customer warrants that it has full legal title to, or the power and right to transfer title to, the PCB Material (including, without limitation, all licenses or permits required by law or regulation to be obtained by the owner and/or generator of the material), and that the Customer has no knowledge that the PCB Material is not as otherwise described in the contract documents.

e. If the Customer provides containers for transportation and/or storage of the PCB Materials, such containers shall comply with all applicable law. GE's sole remedy for the Customer's default under this paragraph is, that upon discovery of one or more non-complying containers, GE may provide complying containers and charge the Customer for the containers, the labor needed to transfer the PCB Material into complying containers, and any additional disposal charges.

f. To the extent that any PCB Material is to be disposed of, GE will take title to such PCB Material when it is loaded on a transport vehicle provided by GE or when the PCB Material is delivered to a GE facility, whichever is earlier. If GE and Customer have agreed in writing that title will pass at an earlier time, such agreement will govern. GE takes title to the PCB Material only for the purpose of disposal and shall not

use or transfer title to the PCB Material for any other purpose. In the event that the PCB Material is later determined to be of a nature or character different from that described in the contract documents, title shall pass back to the Customer and, unless otherwise agreed, GE may return the PCB material to the Customer at the Customer's expense and the Customer shall be liable for and shall indemnify GE against all losses, damages and claims caused by the PCB material including any damage to the environment, except to the extent that such losses, damages or claims are the result of the negligent or other illegal act or omission of GE or its subcontractors.

g. Unless the Customer has otherwise advised GE in writing before commencement of the PCB Service, the Customer represents that any of the PCB material which is to be disposed of has not been in storage for disposal or out of service prior to the start of work. The Customer shall indemnify GE against all loss, cost and liability, including fines, penalties, attorneys' fees and costs of defense and extra costs of disposal, on account of any failure of GE to cause the disposal of any PCB material prior to one year after the PCB Material first went into storage for disposal because of reliance on the representation described in the preceding sentence or on any false or mistaken representation by the Customer concerning the date when the PCB material first went into storage for disposal.

h. Unless otherwise agreed or required by law, GE will not test the PCB Material to determine the level of PCB concentration without the prior consent of the Customer. Unless there is a determination of PCB concentration made or accepted by GE:

- (1) GE may charge the disposal price for PCB Material of the highest concentration;
- (2) GE may use special procedures to prevent contamination of its facilities and equipment and make an appropriate extra charge for such service; and
- (3) GE shall not be liable to the Customer for any level of PCB concentration revealed by a subsequent test.

i. The following rules apply in the case of any replacement of insulating fluid for the purpose of reclassifying any equipment under 40CFR 761.30(a)(2)(v), (b)(2)(vii) or (h)(2)(v):

- (1) Unless otherwise agreed, the Customer shall be responsible for operating the equipment as required by regulation or otherwise during a 90-day in-service period.
- (2) GE will test to determine the level of PCB concentration prior to fluid replacement and will make a compliance retest after the 90-day in-service period.
- (3) GE guarantees that the PCB concentration shown by a compliance retest will not exceed the concentration level stated in the contract documents, or, if no level is stated, then, that the PCB concentration will be such that the equipment will be reclassified to the next lower class. The Customer's sole remedy for a breach of this guarantee is that GE will reperform the service to achieve the results guaranteed. GE shall not be responsible for any increase in PCB concentration shown by testing after a successful compliance retest.

j. Subject to the provisions of paragraph 2.k, below, in the event of the failure by GE, its employees, agents and subcontractors to comply with any applicable federal, state or municipal law, regulation or rule which directly or indirectly regulates or affects the use, collection, handling, storage, transportation or disposal of the PCB Material; or the release of all or any part of the PCB material prior to the completion of the

(Continued on reverse)

**DNR**  
**MICHIGAN DEPARTMENT**  
**OF NATURAL RESOURCES**

DO NOT WRITE IN THIS SPACE  
ATT. ☐ DIS. ☐ REJ. ☐ PR ☐

DEC 19 1988  
1979, as amended and Act 136, P.A.  
1959.  
Failure to file is punishable under  
section 299.545 MCL or Section 10 of  
Act 136, P.A. 1963.

Please print or type.

Form Approved OMB No. 2050-0038 Expires 9-30-88

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. MI 270013758		Manifest Document No. 0000000000		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address STEVE WEERS 177 ANGELL ST. BATTLECREEK, MI 49016		4. Generator's Phone 616 963-5511		5. State Manifest Document Number MI 1049869		6. State Generator ID			
5. Transporter 1 Company Name GENERAL ELECTRIC COMPANY		6. US EPA ID Number 0ED004527PP		7. State Transporter ID		8. Transporter Phone 416 232-1000			
7. Transporter 2 Company Name		8. US EPA ID Number		9. State Transporter ID		10. Transporter's Phone			
9. Designated Facility Name and Site Address GENERAL ELECTRIC COMPANY 4477 EAST 49TH STREET CLEVELAND, OHIO 44125		10. US EPA ID Number 0ED00452700		11. State Facility ID		12. Facility Phone 216 883-1000			
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER).				12. Containers		13. Total Quantity		14. Unit	
a. HAZARDOUS SUBSTANCE, LIQUID, N.O.S., ORM-E NA9188, RQ, (POLYCHLORINATED BIPHENYLS)				No. 0101		Type CM		050000	
b.									
c.									
d.									
15. Additional Descriptions for Materials Listed Above a. TRANSFORMER WITH LIQUID (FULL)				K. Handling Codes for Wastes Listed Above		a. 1		b. 2	
15. Special Handling Instructions, and Additional Information DIKE AND CONTAIN SPILLS, AVOID SKIN CONTACT, GE REF# 60891									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.									
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.									
Printed/Typed Name Stephen M. Weers				Signature Stephen M. Weers				Date 16/30/88	
17. Transporter 1 Acknowledgement or Receipt of Materials				Printed/Typed Name FRED. MONTONARO				Signature Fred Montonaro	
				Signature				Date 16/30/88	
18. Transporter 2 Acknowledgement or Receipt of Materials				Printed/Typed Name				Signature	
				Signature				Date	
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest, except as noted in item 19.									
Printed/Typed Name				Signature				Date	
				Signature				Date	

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-4708 OR OUT OF STATE AT 617-373-7690 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.



GE Industry  
Sales & Services

## Certificate of Disposal

General Electric Company certifies  
that all material received from

WALDORF PAPER

described on

Manifest Number 00901 Dated JUNE 30, 1988 was  
disposed of at the following Disposal Sites:

TRANSFORMER DISPOSED AT: ENVIROSAFE SERVICES OF IDAHO  
10 1/2 MILES, NW, GRANDVIEW, IDAHO 63624  
EPA ID NUMBER: IDD073114654  
MANIFEST DOCUMENT NUMBER: 00913

Authorized Signature

PCB FACILITY SUPERVISOR

Title

4477 EAST 49TH STREET

Street Address

CLEVELAND

OHIO

44125

City

State

Zip



## ENVIROSAFE SERVICES OF IDAHO, INC.

May 24, 1989

General Electric Company

Cleveland Apparatus Service  
4477 East 49th Street

Cleveland, OH 44125

ATTENTION: Mr. Paul Bender

SUBJECT: CERTIFICATE OF DISPOSAL

<u>MANIFEST#</u>	<u>DATE RECEIVED</u>	<u>DATE DISPOSED</u>	<u>MATERIALS</u>
00905	07-05-88	07-05-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00913	07-21-88	07-22-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00943	08-08-88	08-08-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00946	08-08-88	08-10-88 <i>posted</i>	PCB D & F Transformers
00958	08-16-88	08-16-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums
00976	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums/ Drum Solids
00977	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers

Specific material as identified by the above Manifest Document Number(s), has been received and disposed of at our landfill facility located in Grand View, Idaho in accordance with contract.

If you have any questions or need additional information feel free to contact me in the Boise office at (208) 384-1500.

Sincerely,

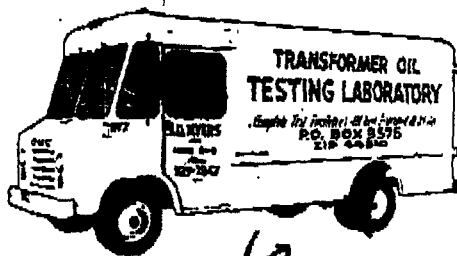
*Ida Larson*

Ida Larson  
Accounts Receivable

Post-It<sup>®</sup> brand fax transmittal memo 7671 # of pages ~~13~~ 13

To Gary Kay	From Don Opala
Co Waldorf Corp	Co Waldorf Corp
Dept ST Paul	Phone #
Fax #	(66) 963-5564

13 pages



# transformer consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FWDate 5-5-76Customer St. Regis PaperCity Battle CreekState Mi

### LOCATION OF TRANSFORMER

TC # 3Substation Name or Number Conveyor☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>42</u>	<u>0.02</u>	<u>—</u>	<u>—</u>	<u>WHD</u>	<u>1.54</u>	<u>OK</u>	<u>GOOD</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer West.Primary Volts 2400Gal. 240 ☐ Oil ☒ AskarelSerial Number YDR 4085Secondary Volts 480Impedance 5.6KVA Rating 1000Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level N Radiators ☒ Yes ☐ No Conservator Tank ☐ Yes ☒ No Top Valve 1"Temperature 31 Fans ☐ Yes ☒ No Tap Changer Comp. ☐ Yes ☒ No Bottom Valve 1"Pressure/Vacuum +1/2 H<sub>2</sub>O Cooled ☐ Yes ☒ No Bushings: ☐ Top ☒ Side Other Access \_\_\_\_\_

### VISUAL INSPECTION

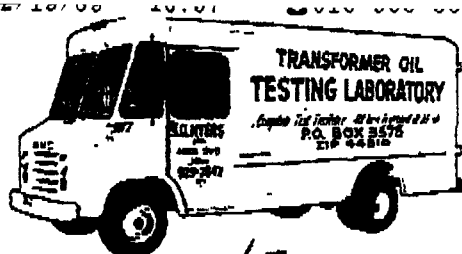
Cleanliness ☒ Good \_\_\_\_\_ Gaskets ☐ OK \_\_\_\_\_Paint ☒ Good ☐ Fair ☐ Bad Bushings ☐ OK \_\_\_\_\_Leaks ☒ None \_\_\_\_\_ Other \_\_\_\_\_

### NOTES - COMMENTS

44 7.00  
40 6.80  
42 20  
— 220

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ No \_\_\_\_\_Problem ReR Hoses? ☐ No \_\_\_\_\_Problem 3ø Power? ☐ No \_\_\_\_\_De-Energize? ☐ No \_\_\_\_\_



# Transformer consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FNDate 5-5-76Customer St. Regis PaperCity Butte CreekState Mi.

### LOCATION OF TRANSFORMER

TC # 4Substation Name or Number Conveyer  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>41</u>	<u>0.045</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>Clear</u>	<u>GOOD</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 434☐ Oil☒ AskarelSerial Number 8113530Secondary Volts 480Impedance 5.63KVA Rating 1000Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 50Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

### VISUAL INSPECTION

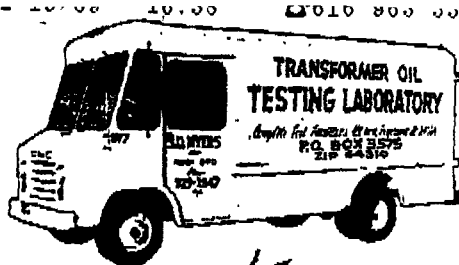
Cleanliness ☒ GoodGaskets ☒ OKPaint ☒ Good Silver☐ Fair☐ BadBushings ☒ OKLeaks ☒ None

Other \_\_\_\_\_

### NOTES - COMMENTS

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3 $\phi$  Power? ☐ NoDe-Energize? ☐ No



# Walden consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FNDate 5-5-76Customer St. Regis PaperCity Battle CreekState Mi

### LOCATION OF TRANSFORMER

TC # 5Substation Name or Number Conveyer  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>46</u>	<u>0.025</u>	<u>—</u>	<u>—</u>	<u>Wh.</u>	<u>1.540</u>	<u>Clr.</u>	<u>Good</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 209☐ Oil  
☒ AskarelSerial Number 8037218Secondary Volts 208V/120Impedance 4.9KVA Rating 300Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 39Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☐ GoodGaskets ☐ OKPaint ☐ GoodSilver ☐ Fair☐ BadBushings ☐ OKLeaks ☐ None

Other \_\_\_\_\_

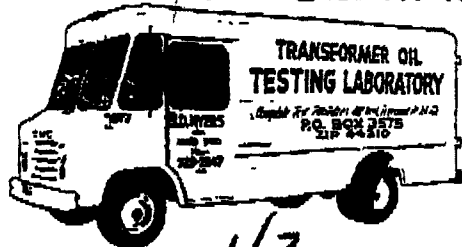
### NOTES - COMMENTS

44  
47  
46

7.75  
7.50  
2.25  
0.25

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No



# Waldorf DC consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FWDate 5-5-86Customer St. Regis PaperCity Battle CreekState Mi.

### LOCATION OF TRANSFORMER

TC # 6Substation Name or Number ConveyerAngell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1.	<u>39</u>	<u>0.05</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>OK</u>	<u>GOOD</u>
2.								
3.								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 434☐ Oil☒ AskarelSerial Number 8113527Secondary Volts 480Impedance 5.63KVA Rating 1000Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 61Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☒ GoodGaskets ☒ OKPaint ☒ Good Silver☐ Fair☐ BadBushings ☒ OKLeaks ☒ None

Other \_\_\_\_\_

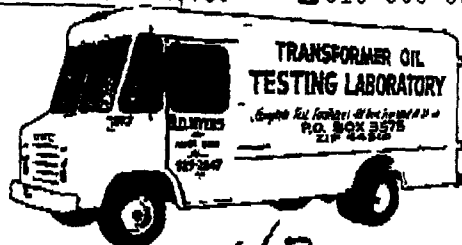
### NOTES - COMMENTS

41  
38  
39

8.25  
7.75  
50  
250

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3ø Power? ☐ NoDe-Energize? ☐ No



# Waldorf BC Consultants

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Customer St. Regis PaperAnalyst FNDate 5-5-76City Battle CreekState Mi.

### LOCATION OF TRANSFORMER

TC # 7Substation Name or Number Power House☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	CLASSIFICATION
1	<u>38</u>	<u>0.03</u>	<u>—</u>	<u>—</u>	<u>whit. 1.540</u>	<u>Cl.</u>		<u>GOOD</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 380 ☐ Oil ☒ AskarelSerial Number 8113528Secondary Volts 480Impedance 5.83KVA Rating 750Phase/Cycle 3/60

Other \_\_\_\_\_

### ADDITIONAL EQUIPMENT

Liquid Level N Radiators ☒ Yes ☐ No Conservator Tank ☐ Yes ☒ No Top Valve 1"Temperature 43 Fans ☐ Yes ☒ No Tap Changer Comp. ☐ Yes ☒ No Bottom Valve 1"Pressure/Vacuum \_\_\_\_\_ H<sub>2</sub>O Cooled ☐ Yes ☒ No Bushings: ☐ Top ☒ Side Other Access \_\_\_\_\_

### VISUAL INSPECTION

Cleanliness ☒ Good \_\_\_\_\_ Gaskets ☐ OK \_\_\_\_\_Paint ☒ Good ☐ Fair ☐ Bad Bushings ☐ OK \_\_\_\_\_Leaks ☐ None slight leak from me Other \_\_\_\_\_

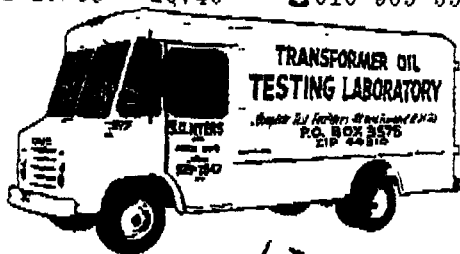
### NOTES - COMMENTS

38  
38  
38  
38

8.60  
8.30  
30  
230

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ No \_\_\_\_\_Problem ReR Hoses? ☐ No \_\_\_\_\_Problem 3Ø Power? ☐ No \_\_\_\_\_De-Energize? ☐ No \_\_\_\_\_



# Waldorf BC Consultants

Div. of S. D. MYERS, INC.

P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FNDate 5-5-76Customer St. Regis PaperCity Bottle CreekState Mn.

## LOCATION OF TRANSFORMER

TC # 18Substation Name or Number Coating Room Sub☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ PoleUnit Or Tag Number Angel Plant

## REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>38</u>	<u>0.03</u>	<u>—</u>	<u>—</u>	<u>Wt.</u>	<u>1.540</u>	<u>Clr.</u>	<u>GOOD</u>
2								
3								

## NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 115☐ Oil☒ AskarelSerial Number 8037219Secondary Volts 208Y/120Impedance 4.85KVA Rating 200Phase/Cycle 3/60

Other

## ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1 plug

Temperature

Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ No

Bottom Valve

Pressure/Vacuum

H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access

## VISUAL INSPECTION

Cleanliness ☐ Good dirtyGaskets ☒ OKPaint ☒ Good ☐ Fair ☐ BadBushings ☒ OKLeaks ☒ None

Other

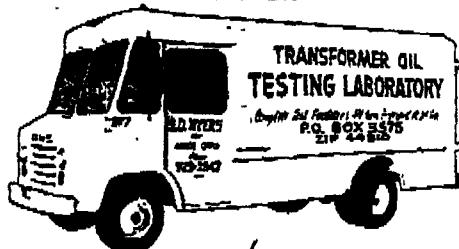
## NOTES - COMMENTS

3640388.708.60308.30

## SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3Ø Power? ☐ NoDe-Energize? ☐ No

ORM: #3-101



# transformer consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FNDate 5-5-76Customer St. Regis PaperCity Battle CreekState Mich.

### LOCATION OF TRANSFORMER

TC # 9Substation Name or Number Coating SubAngell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ PoleUnit Or Tag Number                     

### REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>40</u>	<u>0.02</u>	<u>—</u>	<u>—</u>	<u>Wht.</u>	<u>1.540</u>	<u>Clr.</u>	<u>GOOD</u>
2								
3								

### NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 380☐ Oil☒ AskarelSerial Number 8113529Secondary Volts 480Impedance 5.83KVA Rating 750Phase/Cycle 3/60Other                     

### ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature 39Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ SideOther Access                     

### VISUAL INSPECTION

Cleanliness ☐ Good dirtyGaskets ☐ OK                     Paint ☒ Good ☐ Fair ☐ BadBushings ☐ OK                     Leaks ☒ None                     Other                     

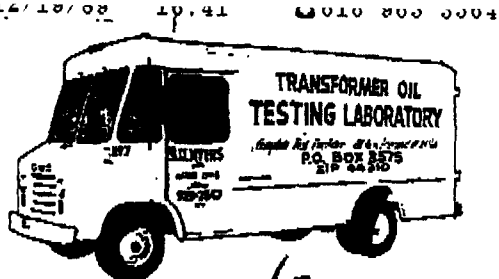
### NOTES - COMMENTS

38  
42  
40

9.10  
8.90  
20  
1  
.520

### SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ No                     Problem ReR Hoses? ☐ No                     Problem 3 $\phi$  Power? ☐ No                     De-Energize? ☐ No



# transformer consultants

Div. of S. D. MYERS, INC.  
P.O. Box 3575, Akron, Ohio 44310 Phone (216) 929-2847

## FIELD COPY REPORT OF TRANSFORMER SURVEY

Mobile Test Laboratory No. 43Analyst FNDate 5-5-76Customer St. Regis PaperCity Battle CreekState Mi.

## LOCATION OF TRANSFORMER

TC # 10Substation Name or Number Low Voltage  
Angell Plant☒ Indoor☐ Outdoor☐ Roof☒ Ground☐ Platform☐ Pole

Unit Or Tag Number \_\_\_\_\_

## REPORT OF TRANSFORMER LIQUID ANALYSIS

	Dielectric	Acid Number	Interfacial Tension	Resistivity	Color	Specific	Visual	CLASSIFICATION
	KV	mg/KOH/g	DYNES/cm (Oil)	10 <sup>9</sup> OHMS/cm (Askarel)	ASTM Number	Gravity	Conditions	
1	<u>43</u>	<u>0.03</u>	<u>—</u>	<u>—</u>	<u>wht.</u>	<u>1.540</u>	<u>clr.</u>	<u>Good</u>
2								
3								

## NAMEPLATE INFORMATION

Manufacturer GEPrimary Volts 2400Gal. 134☐ Oil☒ AskarelSerial Number 8037220Secondary Volts 480Impedance 4.7KVA Rating 200Phase/Cycle 3/60

Other \_\_\_\_\_

## ADDITIONAL EQUIPMENT

Liquid Level NRadiators ☒ Yes ☐ NoConservator Tank ☐ Yes ☒ NoTop Valve 1"Temperature —Fans ☐ Yes ☒ NoTap Changer Comp. ☐ Yes ☒ NoBottom Valve 1"Pressure/Vacuum —H<sub>2</sub>O Cooled ☐ Yes ☒ NoBushings: ☐ Top ☒ Side

Other Access \_\_\_\_\_

## VISUAL INSPECTION

Cleanliness ☒ GoodGaskets ☐ OKPaint ☒ Good☐ Fair☐ BadBushings ☒ OKLeaks ☒ None

Other \_\_\_\_\_

## NOTES - COMMENTS

40  
45  
13

9.40  
9.40  
30  
1  
130

## SERVICING INFORMATION - FOR S. D. MYERS, INC. USE ONLY

Problem Park ReR? ☐ NoProblem ReR Hoses? ☐ NoProblem 3 $\phi$  Power? ☐ NoDe-Energize? ☐ No



DNR

MICHIGAN DEPARTMENT  
OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE

ATTENTION: DISCARD REJ. ☐

1977  
1980  
Failure to file a manifest under  
this regulation is a criminal offense  
under Michigan law.  
Act 315, P.A. 1980, Sec. 2471

Please print or type (Form designed for use on elite (12 pitch) typewriter)

Form Approved OMB No. 2000-040

UNIFORM HAZARDOUS  
WASTE MANIFEST

Generator's US EPA ID No.

Manifest Document No.

Page 1 of 1

Information to be shaded, if not required by Federal law

3. Generator's Name and Mailing Address

Champion Papers 177 Angell St.  
Battle Creek, MI 49015

4. Generator's Phone (962-5511)

5. Transporter 1 Company Name

S. D. Myers, Inc.

US EPA ID Number

7. Transporter 2 Company Name

US EPA ID Number

9. Designated Facility Name and Site Address

S. D. Myers, Inc.  
1500 Commerce Drive  
Stow, OH 44224

10. US EPA ID Number

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER)

12. Containers

No.

Type

13. Total Quantity

14. Unit

Wt/Vol

Waste - Polychlorinated Biphenyls (rags, oil, bottles, etc)  
No. 100-100-100

15. Special Handling (Instructions and Additional Information)

16. Handling Codes or Wastes Listed Above

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations, including applicable state regulations.

17. Printed/Typed Name

Signature

Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

18. Transporter 2 Acknowledgement or Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name

Signature

Month Day Year

GENERAL ELECTRIC COMPANY  
POWER DISTRIBUTION DIVISION INSULATION LABORATORY  
- PITTSFIELD, MASS.

Comprehensive \_\_\_\_\_ Oil X Pyranol Testing Service Report Sheet 1 of 2

Customer Michigan Carton Company

Report No. T65-124

Battle Creek, Michigan

Date 5/12/65

Requisition No. 390-68828, rec'd. 4/20/65

Tested By E. W. Walker

Date Samples Received 5/10/65, Lot #4712

Approved By S.W. Kernaghan

All G. E. Units

Serial Number	8037219	8037220	8113527	8113528	8113529
Dielectric Strength, KV	42	32	37	35	38
Color, APHA <del>ASTM</del>	125	125	125	125	125
Acidity, mg. KOH/g	.02	.02	.04	.03	.03
Visual Condition	Clear, very slight sediment	Clear, slight sediment	Clear, slight sediment	Clear, very slight sediment	Clear, very slight sediment
Viscosity, SUS 37.8°C	52"	53"	53"	53"	53"
Specific Gravity 15.5/15.5°C	1.558	1.557	1.557	1.557	1.558
Water Content PPM	12	10	23	21	35
Refractive Index 25°C.	1.6140	1.6138	1.6142	1.6141	1.6142
Scavenger Content % *	.120	.118	.082	.104	.105
Resistivity ohm-cm, 100°C.	34x10 <sup>9</sup>	37x10 <sup>9</sup>	18x10 <sup>9</sup>	22x10 <sup>9</sup>	29x10 <sup>9</sup>
Free Chlorides PPM	1	1-	1-	1-	1-
Pour Point °C					
Interfacial Tension, 25°C	LIGHTNING #3 SUB	LOW LIFT PUMP STA. #2 SUB	#2 TRANS	POWER #1 SUB	POWER #3 SUB
Pwr. Factor %, 25°C					
100°C					
Corrosive Sulfur ASTM D1275	*Scavenger is of the D50P18 Variety				
Organic Contamination Qualitative	Slight	Slight	Slight	Slight	Slight
	1325122	1320100	1359100	1341122	1340122

Based on the samples and information submitted, the following recommendations are made.

Customer: (2)

79 E. Fountain St.  
Battle Creek, Mich.  
Att. Mr. H. Decker  
RM Lesperance  
43-240 (Req. enc.)  
HC Kelly 34-346  
SW Kernaghan 8-510  
EW Walker 8-403(2)  
File

These Pyranols are in suitable condition for continued use but the Pyranol in units #8113527 and 8113530 are somewhat higher in acid content and lower in scavenger content than the others.

These units should be re-sampled and tested after six months, and if the acidity continues to rise and/or the scavenger content is further depleted, corrective action should be taken.

GENERAL ELECTRIC COMPANY  
POWER DISTRIBUTION DIVISION      INSULATION LABORATORY  
PITTSFIELD, MASS.

Sheet 2 of 2

\_\_\_\_\_ Oil   X   Pyranol Testing Service Report \_\_\_\_\_

Customer Michigan Carton Company  
Battle Creek, Mich.

Report No. T65-124

Requisition No. \_\_\_\_\_

Date \_\_\_\_\_

Date Samples Received \_\_\_\_\_

Tested By \_\_\_\_\_

Approved By \_\_\_\_\_

Serial Number	8113530	8037218			
Dielectric Strength, KV	35	39			
Color, APHA-ASTM	125	90			
Acidity, mg. KOH/g	.04	.02			
Visual Condition	Clear, very slight sediment	Clear, very slight sediment			
Viscosity, SUS 37.8°C	53"	52"			
Specific Gravity 15.5/15.5°C	1.560	1.557			
Water Content PPM	14	19			
Refractive Index 25°C.	1.6143	1.6141			
Scavenger Content % *	.078	.100			
Resistivity ohm-cm., 100°C	$18 \times 10^9$	$42 \times 10^9$			
Free Chlorides PPM	.1-	.1-			
Pour Point °C					
Interfacial Tension, 25°C	#1 TRANS LIGHTING	#2 SUB. #2 SUB			
Pwr. Factor %, 25°C					
100°C					
Corrosive Sulfur ASTM D1275	Slight	Slight			
Organic Contamination Qualitative					
	1347100	1340100			

Based on the samples and information submitted, the following recommendations are made.

Post-It™ brand fax transmittal memo 7671 # of pages > ~~13~~ 13

To	Gary Kay	From	Don Opala
Co	Waldorf Corp	Co	Waldorf Corp
Dept	ST Paul	Phone #	
Fax #		Fax #	(66) 963-5564

~~13~~ 12  
pages

13  
13



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

23 February 1989

Ms. Lynelle Marolf  
Michigan Department of Natural Resources  
Environmental Response Division  
Title III Notification (SERC)  
P.O. Box 30028  
Lansing, MI 48909

Ms. Marolf

Attached please find the completed Tier Two Inventory Forms for 1988 and Confidential Location Information Sheet of chemical(s) for which we have M.S.D.S. and a quantity in excess of 10,000 lbs. as required per Title III of E.A.D.A.. In preparing this information, Waldorf has relied upon the manufacturer's M.S.D.S. As such, the determination of physical and health hazards is offered in good faith but without warranty or representation.

We have also forwarded the above information to the Local Emergency Planning Commission and the Local Fire Department.

If you have any questions, please contact me at your convenience.

Yours truly,

A handwritten signature in cursive script that reads "Randy B. Yates".

Randy B. Yates  
Safety/Security Supervisor  
Waldorf Corporation, Battle Creek Plant

enc;

copies; G. Kaziukewicz  
L. Spurgeon  
D. Opala

P 046 864 841

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED  
NOT FOR INTERNATIONAL MAIL

(See Reverse)

To: Ms. Lynelle Marolf	
MI Dept. of Natural Resour.	
Street and No. P.O. BOX 30028	
P.O. State and ZIP Code LANSING, MI. 48909	
Postage	\$ .56
Certified Fee	.75
Insurance Premium Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	. / 0
TOTAL Postage and Fees	\$ 2.01
Postmark for Date	28 1989

U.S.G.P.O. 1984-446-0-4

PS Form 3800, Feb. 1982

<p>● <b>SENDER:</b> Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.</p> <p>Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.</p> <p>1. <input checked="" type="checkbox"/> Show to whom delivered, date, and addressee's address. 2. <input type="checkbox"/> Restricted Delivery (Extra charge)</p>	
<p>3. Article Addressed to:</p> <p>Ms. Lynelle Marolf Michigan Dept. Natural Resources Environmental Response Division Title III NOTIFICATION DIV. P. O. BOX 30028 LANSING, MICHIGAN 48909</p>	<p>4. Article Number</p> <p>P 046-864-841</p>
<p>5. Signature <i>[Signature]</i></p> <p>AGENT FOR STATE OF MICHIGAN</p>	<p>Types of Service:</p> <p><input checked="" type="checkbox"/> Registered <input type="checkbox"/> Insured</p> <p><input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD</p> <p><input type="checkbox"/> Express Mail</p>
<p>6. Signature - Agent</p> <p>FEB 27 1988</p>	<p>Always obtain signature of addressee or agent and DATE DELIVERED.</p> <p>8. Addressee's Address (ONLY if requested and fee paid)</p>
<p>7. Date of Delivery</p> <p>Post Office Box 30028</p>	<p>DOMESTIC RETURN RECEIPT</p>



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

23 February 1989

Mr. Bob Thompson  
Local Emergency Planning Commission (LEPC)  
Calhoun County  
Civil Defence Director  
315 West Green  
Marshall, MI 49068

Mr. Thompson,

Attached please find the completed Tier Two Inventory Form for 1988 and Confidential Location Information Sheet of chemical(s) for which we have a M.S.D.S. and a quantity in excess of 10,000 lbs. as required per Title III of S.A.R.A.. In preparing this information, Waldorf has relied upon the manufacturer's M.S.D.S. As such, the determination of physical and health hazards is offered in good faith but without warranty or representation.

We have also forwarded the above information to the State Emergency Response Commission and the Local Fire Department.

If you have any questions, please contact me at your convenience.

Yours truly,

A handwritten signature in cursive script that reads "Randy B. Yates".

Randy B. Yates  
Safety/Security Supervisor  
Waldorf Corporation, Battle Creek Plant

enc;

copies; G. Kaziukewicz  
L. Spurgeon  
D. Opala

## Tier Two EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY

Երեւան  
 Ֆոթոտեղեւծություն  
 Բ. Մ. (Հատուկ)

Important: Read all instructions before completing form

Reporting Period From January 1 to December 31, 19\_\_\_\_

## Chemical Description

### Physical and Health Hazards:

**[check all that apply]**

Inventory		
Max. Daily Amount (code)	Avg. Daily Amount (code)	No. of Days On-site (days)

## Storage Codes and Locations (Non-Confidential)

**Storage Code**

### Storage Locations

CAS [ ] [ ] [ ] [ ] [ ] [ ] [ ] Trade Secret [ ]  
Chem Name Polychlorinated  
Biphenyls

☐ Solid off    ☐ Solid    ☐ Solid    ☒ Liquid    ☐ Gas  
 that apply:

<input type="checkbox"/>	Fire
<input type="checkbox"/>	Sudden Release of Pressure
<input type="checkbox"/>	Reactivity
<input type="checkbox"/>	Immediate (acute)
<input checked="" type="checkbox"/>	Delayed (chronic)

per MSDS

03 03 365

~~CONFIDENTIAL~~

CAS [ ] [ ] [ ] [ ] [ ] [ ] Trade Secret [ ]  
Chem. Name Penford Gum 270  
(Starch)

Check off that apply: ☐ None ☐ Min ☒ Sub ☐ Int ☐ Gen

☐ Fire  
☐ Sudden Release of Pressure  
☐ Reactivity  
☐ Immediate (acute)  
☐ Delayed (chronic)  
 None per MSDS

03 03 365

~~CONFIDENTIAL~~

CAS           Trade  
Suctel

Pro-Cote 200

Chem. #44119

Arch all that apply ☐ ☐ ☒ ☐ ☐

☐ Fire  
☐ Sudden Release  
of Pressure  
☐ Reactivity  
☐ Immediate (acute)  
☐ Delayed (chronic)  
None per  
MSDS

03 03 365

~~CONFIDENTIAL~~

**Certification** (draw and sign after completing all sections)

I, a duly sworn member of the New York State Police, have personally examined and am familiar with the information submitted in this and all attached documents, and that based on the training of those individuals responsible for collecting the information, I believe that the submitted information is true, accurate, and complete.

**Randy B. Yates** Safety Supervisor

21 Feb 1989

**Optional Attachments (Check one)**

☐ I have attached a site plan  
☐ I have attached a list of site  
contributor addresses.

56

Tier Two EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY	Facility Identification		Owner/Operator Name	
	Name <u>Waldorf Corporation</u>		Name <u>Waldorf Corporation</u>	
	Street Address <u>177 Angell Street</u>		Mail Address <u>177 Angell Street Battle Creek, MI 49016</u>	
	City <u>Battle Creek</u> State <u>MI</u> Zip <u>49016</u>		Emergency Contact	
Specific Information by Chemical	SIC Code <u>2631</u> Fun & Drug <u>07</u> <u>256</u> <u>81165</u>		Name <u>Randy Yates</u> Title <u>Safety Supervisor</u>	
	FOI OFFICIAL USE ONLY		Phone <u>616 963 5511 Ext 346</u> 24 Hr. Phone <u>616 966 7066</u>	
	Date Received		Name <u>Don Opala</u> Title <u>ENGINEER</u>	
		Phone <u>616 963 5511</u> 24 Hr. Phone <u>616 966 7217</u>		

Important: Read all instructions before completing form

Reporting Period From January 1 to December 31, 19\_\_

## Confidential Location Information Sheet

## Storage Codes and Locations (Confidential)

Storage Codes

Storage Locations

CAS # ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Chem. Name Polychlorinated Biphenyls

R14 Located in the conveyor room  
transformer, coating room  
transformer, power house  
transformer ground floor  
pumping station transformer  
ground floor.

CAS # ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Chem. Name Penford Gum Starch 270 (Starch)

J14 Located in the conveyor room  
storage area, and the coating  
dept. on the first floor

CAS # ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Chem. Name Pro-Cote 200

J14 Located in the conveyor room  
storage area, and the coating  
dept. on the second floor.

### Certification (Read and sign after completing all sections)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Randy B. Yates Supervisor Safety

Name and official title of owner/operator or authorized representative

Signature

21 Feb 1989

Date signed

### Optional Attachments (Check box)



I have attached a site plan

I have attached a list of site coordinate elevations

Federal Register / Vol. 52, No. 191 / Thursday, October 15, 1987 / Rules and Regulations

38373



<p><b>Tier Two</b></p> <p>EMERGENCY AND HAZARDOUS CHEMICAL INVENTORIES</p> <p>Specific Information on 1 Available</p>	<p><b>Owner/Operator Name</b></p> <p>Name <u>Waldorf Corporation</u> Phone <u>(616) 963-5511</u></p> <p>Mail Address <u>177 Angell Street Battle Creek, MI 49016</u></p> <p><b>Emergency Contact</b></p> <p>Name <u>Randy Yates</u> Title <u>Safety Supervisor</u></p> <p>Phone <u>(616) 963-5511 Ext 346</u> 24 Hr. Phone <u>(616) 966-7446</u></p> <p>Name <u>Don Odala</u> Title <u>ENGINEER</u></p> <p>Phone <u>(616) 963-5511</u> 24 Hr. Phone <u>(616) 966-7217</u></p>
<p><b>From: Identification</b></p> <p>Name <u>Waldorf Corporation</u></p> <p>Street Address <u>177 Angell Street</u></p> <p>City <u>Battle Creek</u> State <u>MI</u> Zip <u>49016</u></p> <p>SEC Code <u>2631</u> Don &amp; Rec Number <u>017-256-811615</u></p>	
<p><b>FOR OFFICIAL USE ONLY</b></p> <p>DATE <u>03</u></p> <p>Date Received _____</p>	

**Tier Two**  
 EMERGENCY  
 AND  
 HAZARDOUS  
 CHEMICAL  
 HAZARDOUS

**Free : Identification**

177 Angell Street  
City Battle Creek State MI Zip 49016

SAC Costa 2431 Run & Hide 07-256-8165

Group/Operator Name

Mail Address 199 Angell Street Battle Creek, MI 49016

### Emergency Contact

Name DON ODALA Title ENGINEER  
Phone 1/616 963 5511 2519 Phone 1/616 966 7217

**Important: Read all instructions before completing form**

Confidential Location Information Sheet		Storage Codes and Locations (Continued)																
		Storage Codes	Storage Locations															
CASE #	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Chem. Name	Polychlorinated Biphenyls															
			<div style="display: flex; align-items: center;"> <table border="1" style="margin-right: 5px;"> <tr><td>R</td><td>1</td><td>4</td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> </table> <div>           Located in the conveyor room transformer, coating room transformer, power house transformer ground floor pumping station transformer ground floor.         </div> </div>	R	1	4												
R	1	4																
CASE #	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Chem. Name	Penford Gum Starch 270 (Starch)															
			<div style="display: flex; align-items: center;"> <table border="1" style="margin-right: 5px;"> <tr><td>J</td><td>1</td><td>4</td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> </table> <div>           Located in the conveyor room storage area, and the coating dept. on the first floor         </div> </div>	J	1	4												
J	1	4																
CASE #	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Chem. Name	Pro-Cote 200															
			<div style="display: flex; align-items: center;"> <table border="1" style="margin-right: 5px;"> <tr><td>S</td><td>1</td><td>4</td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> </table> <div>           Located in the conveyor room storage area, and the coating dept. on the second floor.         </div> </div>	S	1	4												
S	1	4																

**Certification** (Read and sign after completing all sections)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

**Randy B. Yates Supervisor Safety**      **21 Feb 1989**

Name and official title of Environmental Oil Spill Response authorized representative      Date signed

**Optional Attachments (Check one)**

☒ I have attached a site plan

☐ I have attached a list of site coordinate abbreviations

38373

Copy to Mark &  
12/20/89

Post-It <sup>®</sup> brand fax transmittal memo 7671		# of pages > <del>13</del> 13	
To	Gary Kay	From	Don Opala
Co	Waldorf Corp	Co	Waldorf Corp
Dept	ST Paul	Phone #	
Fax #		Fax #	(66)963-5564

12  
pages

2-15



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

23 February 1989

Ms. Lynelle Marolf  
Michigan Department of Natural Resources  
Environmental Response Division  
Title III Notification (SERC)  
P.O. Box 30028  
Lansing, MI 48909

Ms. Marolf

Attached please find the completed Tier Two Inventory Forms for 1988 and Confidential Location Information Sheet of chemical(s) for which we have M.S.D.S. and a quantity in excess of 10,000 lbs. as required per Title III of E.A.D.E.. In preparing this information, Waldorf has relied upon the manufacturer's M.S.D.S. As such, the determination of physical and health hazards is offered in good faith but without warranty or representation.

We have also forwarded the above information to the Local Emergency Planning Commission and the Local Fire Department.

If you have any questions, please contact me at your convenience.

Yours truly,

A handwritten signature in cursive script that reads "Randy B. Yates".

Randy B. Yates  
Safety/Security Supervisor  
Waldorf Corporation, Battle Creek Plant

enc;

copies; G. Kaziukewicz  
L. Spurgeon  
D. Opala

P 046 864 541

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED  
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Ms. Lynelle Marolf Dept. of Natural Resources Street and No. P.O. BOX 30028 P.O. State and Zip Code LANSING, MI. 48909	
Postage	\$ 56
Certified Fee	75
Return Receipt Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return receipt showing to whom, Date, and Address of Delivery	10
TOTAL Postage and Fees	2.01
Postmark of Date 1988	

\* U.S.G.P.O. 1984-446-0

PS Form 3800, Feb. 1982

**SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.**  
Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☒ Show to whom delivered, date, and address's address. 2. ☐ Restricted Delivery  
(Extra charge) (Extra charge)

3. Article Addressed to:  
Ms. Lynelle Marolf  
Michigan Dept. Natural Resources  
Environmental Response Division  
Title III NOTIFICATION DIV.  
P. O. BOX 30028  
LANSING, MICHIGAN 48909  
*Robert M. Marolf*

4. Article Number  
P 046-864-541

Type of Service:  
☐ Registered ☐ Insured  
☒ Certified ☐ COD  
☐ Express Mail

Always obtain signature of addressee or agent and **DATE DELIVERED.**

5. Signature - Addressee or Agent  
X  
AGENT FOR STATE OF MICHIGAN

6. Signature - Agent  
X  
FEB 27 1988

7. Date of Delivery  
Post Office Box 30026  
Lansing, Michigan 48909  
Feb. 27, 1988

8. Addressee's Address (ONLY if requested and fee paid)

DOMESTIC RETURN RECEIPT

## Tier Two

Curriculum (K-12 and non-credit continuing ed sections)

I, being under penalty of law, have personally examined and am familiar with the information submitted in this and all attached documents, and the based on the review of all documents submitted for completion of this information, I believe that the submitted information is true, accurate and complete.

Randy B. Yates Safety Supervisor

Optional Attachments (Check one)

☐ I have attached a site plan

☐ I have attached a list of site contributors/affiliations

56

Tier Two EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY	Facility Identification		Owner/Operator Name		
	Name <u>Waldorf Corporation</u>		Name <u>Waldorf Corporation</u>		
	Street Address <u>177 Angell Street</u>		Mailing Address <u>177 Angell Street Battle Creek, MI 49016</u>		
	City <u>Battle Creek</u> State <u>MI</u> Zip <u>49016</u>		Emergency Contact		
Specific Information on Chemicals	AIC Code <u>2631</u> Purity & Grade <u>017-256-811615</u>		Name <u>Randy Yates</u> Title <u>Safety Supervisor</u>		
	FOR OFFICIAL USE ONLY <u>02</u>		Phone <u>616 963-5571 Ext 346</u> 24 Hr. Phone <u>616 963-7446</u>		
	Date Received <u>21 Feb 1989</u>		Name <u>Don Opala</u> Title <u>ENGINEER</u>		
		Phone <u>616 963-5571</u> 24 Hr. Phone <u>616 963-7217</u>			

Department: Read and instructions before completing form

Reporting Period From January 1 to December 31, 19\_\_

Confidential Location Information Sheet		Storage Codes and Locations (Confidential)	
		Storage Codes	Storage Locations
CASE # <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Chem. Name <u>Polychlorinated Biphenyls</u>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Located in the conveyor room transformer, coating room transformer, power house transformer ground floor pumping station transformer ground floor.
CASE # <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Chem. Name <u>Penford Gum Starch 270 (Starch)</u>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Located in the conveyor room storage area, and the coating dept. on the first floor
CASE # <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Chem. Name <u>Pro-Cote 200</u>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Located in the conveyor room storage area, and the coating dept. on the second floor.

Certification (Read and sign after completing all sections) I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. <u>Randy B. Yates Supervisor Safety</u> Name and official title of owner/operator OR owner/operator's authorized representative		Signature <u>[Signature]</u> Date signed <u>21 Feb 1989</u>
Optional Attachments (Check one) <input type="checkbox"/> I have attached a site plan <input type="checkbox"/> I have attached a list of site coordinate designations		



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

23 February 1989

City of Battle Creek Fire Department  
195 East Michigan Avenue  
Battle Creek, MI 49017

Attn: Charles Owens, Department Director

Mr. Owens,

Attached please find the completed Tier Two Inventory Form 1988 and Confidential Location Information Sheet of Chemical(s) for which we have a M.S.D.S. and a quantity in excess of 10,000 lbs. as required pre Title III of S.A.H.A.. In preparing this information, Waldorf has relied upon the manufacturers M.S.D.S.. As such, the determination of physical and health hazards is offered in good faith but without warranty or representation.

We have also forwarded the above information to the State Emergency Response Commission and the Local Emergency Planning Commission.

If you have any questions, please contact me at your convenience

Yours truly,

A handwritten signature in cursive script that reads "Randy B. Yates".

Randy B. Yates  
Safety/Security Supervisor  
Waldorf Corporation, Battle Creek Plant

enc;

copies; G. Kaziukewicz  
L. Spurgeon  
D. Opala

P28

RECEIPT FOR CERTIFIED MAIL  
NO INSURANCE COVERAGE PROVIDED -  
NOT FOR INTERNATIONAL MAIL  
(See Reverse)

SENT TO CITY OF BATTLE CREEK STREET AND NO. FIRE DEPT. 195 E. MICHIGAN AVE. P.O. STATE AND ZIP BATTLE CREEK MT 10018		POSTAGE \$ 5.60 - 75¢ 70¢
SPECIAL DELIVERY RESTRICTED DELIVERY SHOW TO WHOM AND DATE DELIVERED SHOW TO WHOM AND DATE DELIVERED SHOW TO WHOM AND DATE DELIVERED SHOW TO WHOM AND DATE DELIVERED SHOW TO WHOM AND DATE DELIVERED		
MAIL SERVICES COMM. POSTMASTER FOR FEES		
TOTAL POSTAGE AND POSTMASTER'S CHARGE		\$ 2.01

PS Form 3801, Mar. 1, 76



**SENDER:** Complete items 1 and 2. If additional services are desired, complete items 3 and 4.

Put your address in the RETURN TO space. If the return address is not provided, the item will be returned to the post office. For additional fees, the following services are available. Consult the postmaster for fees and check box(es) for additional service(s) requested.

1. ☒ Show to whom delivered, date, and address of addressee. 2. ☐ Restricted Delivery (Extra charge)

3. Article Addressed to:  
CITY OF BATTLE CREEK FIRE DEPT.  
195 EAST MICHIGAN AVE.  
BATTLE CREEK, MI 49901

4. Article Number:  
9288-7209490

5. Signature - Addressee:  
[Signature]

6. Signature - Agent:  
[Signature]

7. Date of Delivery:  
12-18-88

8. Addressee's Address - ONLY if requested (see pg. 1)  
[Address]

9. Always obtain return of addressee (or agent) and DATE DELIVERED.

PS Form 3811, Mar. 1987 U.S. POSTAL SERVICE DOMESTIC RETURN RECEIPT







177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

23 February 1989

Mr. Bob Thompson  
Local Emergency Planning Commission (LEPC)  
Calhoun County  
Civil Defence Director  
315 West Green  
Marshall, MI 49068

Mr. Thompson,

Attached please find the completed Tier Two Inventory Form for 1988 and Confidential Location Information Sheet of chemical(s) for which we have a M.S.D.S. and a quantity in excess of 10,000 lbs. as required per Title III of S.A.R.A.. In preparing this information, Waldorf has relied upon the manufacturer's M.S.D.S. As such, the determination of physical and health hazards is offered in good faith but without warranty or representation.

We have also forwarded the above information to the State Emergency Response Commission and the Local Fire Department.

If you have any questions, please contact me at your convenience

Yours truly,

A handwritten signature in cursive script that reads "Randy B. Yates".

Randy B. Yates  
Safety/Security Supervisor  
Waldorf Corporation, Battle Creek Plant

enc;

copies; G. Kaziukewicz  
L. Spurgeon  
D. Opala



FOR  
FBI A  
USE  
ONLY

ՀԱՅԿԱՅԻՆ ԴԵՄՈՔՐԱՏԻԿԱՆ ԿՈՄՄՈՒՆԻՍՏԻԿԱՆ ԿՈՆԳՐԵՍՍԻ ՄԱՍԻՆ

[illegible]

CONFIDENTIAL <sup>See</sup> Page 10  
(Sf R 10)

CASE # [ ] [ ] [ ] [ ] [ ] [ ] Chem PRO-C, ( 200

( 1991-1992 ) Year of completion of regional

I carefully review the ally list to find that I have personally examined and verified the information submitted to me. I have also reviewed the ally list to ensure that it is accurate and complete. I have also reviewed the ally list to ensure that it is accurate and complete.

Randy B. Yates Supervisor Safety

[illegible]

1. *Hayes & Lefkowitz* p. 1

I have attached in the  
enclosed document a copy of

23

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Post-It™ brand fax transmittal memo 7671 # of pages » 4

To Gary Kay	From Don Ooala
Co. Waldorf	Co. Waldorf
Dept.	Phone #
Fax #	Fax # 616 9635564

EC 19 '89 16:55

R16 000 5551 0001



**GE Industry  
Sales & Services**

Cleveland Apparatus Service  
General Electric Company  
4477 E. 49th St., Cleveland, OH 44125

Dial Comm:

WALDORF PAPER  
177 ANGELL STREET  
BATTLECREEK, MICHIGAN 49016  
ATTN: STEVE WEERS

Gentlemen:

Enclosed please find your certificates of disposal for the PCB materials received by us on manifest document number 00901 dated 06-30-88. Thank you for the opportunity to be of service. If you have any questions please call us at (216)883-1000 ext. 246.

Yours very truly,

Paul T. Bender  
PCB Facility Supervisor



GE Industry  
Sales & Services

## Certificate of Disposal

General Electric Company certifies  
that all material received from

WALDORF PAPER

described on

Manifest Number 00901 Dated JUNE 30, 1988 was  
disposed of at the following **Disposal Sites:**

TRANSFORMER DISPOSED AT: ENVIROSAFE SERVICES OF IDAHO  
10 1/2 MILES. NW, GRANDVIEW, IDAHO 63624  
EPA ID NUMBER: ID0073114654  
MANIFEST DOCUMENT NUMBER: 00913

Authorized Signature

PCB FACILITY SUPERVISOR

Title

4477 EAST 49TH STREET

Street Address

CLEVELAND

OHIO

44125

City

State

Zip



## ENVIROSAFE SERVICES OF IDAHO, INC.

May 24, 1989

General Electric Company

Cleveland Apparatus Service  
4477 East 49th Street

Cleveland, OH 44125

ATTENTION: Mr. Paul Bender

SUBJECT: CERTIFICATE OF DISPOSAL

<u>MANIFEST#</u>	<u>DATE RECEIVED</u>	<u>DATE DISPOSED</u>	<u>MATERIALS</u>
00905	07-05-88	07-05-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00913	07-21-88	07-22-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00943	08-08-88	08-08-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00946	08-08-88	08-10-88 <i>posted</i>	PCB D & F Transformers
00953	08-16-88	08-16-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums
00976	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums/ Drum Solids
00977	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers

Specific material as identified by the above Manifest Document Number(s), has been received and disposed of at our landfill facility located in Grand View, Idaho in accordance with contract.

If you have any questions or need additional information feel free to contact me in the Boise office at (208) 384-1500.

Sincerely,

*Ida Larson*

Ida Larson  
Accounts Receivable

Post-It™ brand fax transmittal memo 7671 # of pages > 20

To Gary Ray	From DON OPALA
Co. Waldorf 1-St. P.	Co. Waldorf - B.C.
Dept.	Phone #
Fax #	Fax # 616 963-5564

**DIVISION OF**  
**EDWARDS**

**TRANSFORMER**  
**CONSULTANTS**

P.O. Box 4724  
Akron, Ohio 44310  
Phone: (216) 633-2666  
Toll Free: (800) 321-9580

April 13, 1987

Waldorf Corp.  
177 Angell St.  
Battle Creek MI 49016

ATTN: Steve Weers

REF: 03673

Gentlemen:

Enclosed are the results of the transformer oils recently tested by our personnel.

Please refer to the section of the test data master sheet for the specific type of tests performed on your oil.

Normal servicing of units that contain PCB's in excess of 50 PPM is restricted by Federal Law. We can, however, lower the PCB concentration to acceptable limits. If you wish to discuss the options available please feel free to contact us.

Should you require further work on some of your transformers, a formal quotation will be forwarded per your request.

If you have any questions on this or any related matter, do not hesitate to contact our Tallmadge, Ohio office (216/633-2666).

Very truly yours,

*Craig Schley*  
Craig Schley  
Regional Sales

CS/jm

CUST WALDORF CORPORATION

ID # 36125000

MFG WEST

KVA

1,000

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL PLT

UNIT #

S/N YDR4085

SECONDARY

480

KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE	PER CENT	PER CENT	AGING
			TEMP	MOISTURE/DRY WEIGHT	MOISTURE SATURATION	FACTOR
12/19/83			21.07			
1/07/85			11.35			
3/26/87			10.55			

ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
\* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION

CITY

BATTLE CREEK MI

ID # 36125000

DATE PRINTED

4/09/87

SUB. NAME CONVEYOR ANGELL PLT

UNIT #

OTHER

LOCATION

INDOOR / GROUND

## NAMEPLATE DATA

MFG. G.E.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	0A
S/N 8113590	IMPEDENCE	5.63%
KVA 1,000	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 480	BAL LIQUID	434

## ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
H2O COOLED	NO	BUSHING LOC	SIDE ENCLOSED
OIL PUMPS	NO	RECLAIMER	200 FEET
TOP FPV	1.00 IN	POWER V/A	240/40
BOTTOM FPV	1.00 IN	OTHER ACCESS	

## VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS YES/TFPV

## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
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## FIELD SERVICE

COLOR LABEL

CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
5/00/76					.045 AC	N/A	41 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/79					.045 AC	N/A	40 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83		LOW	40 C		.070 AC	N/A		WTR WHITE AC	1.560 AC	CLEAR AC	NONE AC
1/07/85	*****	NOT TESTED PER CUSTOMER REQUEST									
3/26/87		LOW	30 C		.040 AC	N/A	38 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG G.E.

S/N 8113530

KVA

1,000

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL PLT

UNIT #

ID #

36125006

# KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/88			35.00			
3/26/87			26.70			

# ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
\* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

# LIQUID POWER FACTOR

DATE	SERVICE	- 25 C	100 C
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE OU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB NAME CONVEYOR ANGELL PLT UNIT # OTHER

ID # 36125000 DATE PRINTED 4/09/87  
LOCATION INDOOR /GROUND

### NAMEPLATE DATA

MFG G.E.	EQUIP TYPE	TRANSFORMER
DATE MFG	TRANS CLASS	0A
S/N 8097218	IMPEDENCE	4.90%
KVA 300	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 208	GAL LIQUID	209

### ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
H2O COOLED	NO	BUSHING LOC	SIDE ENCLOSED
OIL PUMPS	NO	RECLAIMER	200 FEET
TOP FPV	1.00 IN	POWER V/A	240/40
BOTTOM FPV	1.00 IN	OTHER ACCESS	

### VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS NONE

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
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### FIELD SERVICE

COLOR LABEL CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEV'L	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP GR	VISUAL	SEDIMENT
5/00/76					025 AC	N/A	46 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/79					030 AC	N/A	33 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83		NORMAL	30 C		030 AC	N/A		WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
1/07/85		LOW	30 C		020 AC	N/A		WTR WHITE AC	1.520 AC	CLEAR AC	NONE AC
3/26/87		LOW	40 C		020 AC	N/A	34 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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KEY TO ABBREVIATIONS AC - ACCEPTABLE QU - QUESTIONABLE UN - UNACCEPTABLE

CUST WALDORF CORPORATION ID # 36125000  
MFG G.E. KVA 300 PRIMARY 2,400 SUB NAME CONVEYOR ANGELL PLT UNIT #  
S/N 8037218 SECONDARY 208

KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83			20.73			
1/07/85			14.15			
9/24/87			13.70			

ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE SERVICE ALUMINUM IRON ZINC COPPER LEAD SILVER TIN MOLYBDENUM CADMIUM

\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
\* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

LIQUID POWER FACTOR

DATE SERVICE 25 C 100 C

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB NAME CONVEYOR ANGELL PLT UNIT #

ID # 36125000 DATE PRINTED 4/09/87  
LOCATION INDOOR / GROUND

OTHER

## NAMEPLATE DATA

MFG G.E. EQUIP. TYPE TRANSFORMER  
DATE MFG. TRANS CLASS 0A  
S/N 8113527 IMPEDENCE 5.63%  
KVA 1,000 PHASE/CYCLE 3/60  
PRI 2,400 LIQUID TYPE ASKAREL  
SEC 480 GAL LIQUID 434

## ADDITIONAL EQUIPMENT

RADIATORS YES CONSERVATOR NO  
FANS NO TAP CHANGER NO  
H2O COOLED NO BUSHING LOC SIDE ENCLOSED  
OIL PUMPS NO RECLAIMER 200 FEET  
TOP FPV 1.00 IN POWER V/A 240/40  
BOTTOM FPV 1.00 IN OTHER ACCESS

## VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS NONE

## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE 1242 AROCLOR 1254 AROCLOR 1260 AROCLOR OTHER TOTAL CONTENT

## FIELD SERVICE

COLOR LABEL

CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP	GR	VISUAL	SEDIMENT
5/00/76					.050 AC	N/A	39 AC	WTR WHITE AC	1.540 AC		CLEAR AC	NONE AC
11/00/79					.010 AC	N/A	39 AC	WTR WHITE AC	1.540 AC		CLEAR AC	NONE AC
12/19/83		NORMAL	25 C		.055 AC	N/A		WTR WHITE AC	1.520 AC		CLOUDY QU	NONE AC
1/07/85		LOW	30 C		.010 AC	N/A		WTR WHITE AC	1.520 AC		CLOUDY QU	NONE AC
3/26/87		NORMAL	30 C		.010 AC	N/A	33 AC	WTR WHITE AC	1.540 AC		CLOUDY QU	NONE AC

COMMENTS FREE WATER AND/OR CLOUDY OIL INDICATES MOISTURE.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG G.E.

KVA

1,000

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL PLT

UNIT #

ID # 36125000

S/N 8113527

SECONDARY

480

KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/ DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83			48.73			
1/07/85			22.88			
3/26/87			39.45			

ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION  
SUB. NAME POWER HOUSECITY BATTLE CREEK MI  
UNIT # ANSELL PLANT OTHERID # 36125000 DATE PRINTED 4/09/87  
LOCATION INDOOR / GROUND

## NAMEPLATE DATA

MFG. G.E.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	0A
S/N 8113528	IMPEDENCE	5.83%
KVA 750	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 480	GAL LIQUID	380

## ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
H2O COOLED	NO	BUSHING LOC	SIDE ENCLOSED
OIL PUMPS	NO	RECLAIMER	
TOP FPV	1.00 IN	POWER V/A	240/40
BOTTOM FPV	1.00 IN	OTHER ACCESS	

## VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS YES/BOTTOM GATE VALVE

## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
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## FIELD SERVICE

7/85 UTILITY

COLOR LABEL

CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
5/00/76					.030 AC	N/A	38 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/79					.035 AC	N/A	39 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83		NORMAL	48 C		.040 AC	N/A		PALE YELD AC	1.540 AC	CLEAR AC	NONE AC
1/07/85		LOW	50 C		.040 AC	N/A		PALE YELD AC	1.540 AC	CLEAR AC	NONE AC
3/26/87		NORMAL	45 C		.035 AC	N/A	33 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG S.E.

KVA

750

PRIMARY

2,400

SUB NAME POWER HOUSE

ID # 36125000

S/N 8113528

SECONDARY

480

UNIT # ANGELL PLANT

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83			32.97			
1/07/85			47.20			
3/26/87			41.30			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
 \* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION  
SUB NAME COATING ROOM SUB

CITY BATTLE CREEK MI  
UNIT # ANGELL PLANT

OTHER 3 TOP PLUGS

ID # 36125000

DATE PRINTED 4/09/87

LOCATION INDOOR / GROUND

# NAMEPLATE DATA

MFG G.E.	EQUIP TYPE	TRANSFORMER
DATE MFG	TRANS CLASS	0A
S/N 8097219	IMPEDENCE	4.83%
KVA 200	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 208	GAL LIQUID	115

# ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
H2O COOLED	NO	BUSHING LOC	SIDE ENCLOSED
OIL PUMPS	NO	RECLAIMER	200 FEET
TOP FPV	1.00 IN	POWER V/A	240/40
BOTTOM FPV	1.00 IN	OTHER ACCESS	

# VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS NONE

# PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
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# FIELD SERVICE

COLOR LABEL

CLASS

# LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP	GR.	VISUAL	SEDIMENT
5/00/76					.030 AC	N/A	38 AC	WTR WHITE AC	1.540 AC		CLEAR AC	NONE AC
11/00/79					.030 AC	N/A	35 AC	WTR WHITE AC	1.540 AC		CLEAR AC	NONE AC
12/19/83		NORMAL			.020 AC	N/A		WTR WHITE AC	1.540 AC		CLEAR AC	NONE AC
1/07/85		NORMAL	15 C		.040 AC	N/A		PALE YELD AC	1.540 AC		CLEAR AC	NONE AC
9/26/87		NORMAL			.020 AC	N/A	32 AC	PALE YELD AC	1.540 AC		CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

# GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

ID # 36125000

MFG G.E.

KVA

200

PRIMARY

2,400

SUB NAME COATING ROOM SUB

UNIT # ANGELL PLANT

S/N 8037219

SECONDARY

208

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83			36-13			
1/07/85			26-80			
3/26/87			94-80			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
 \* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION  
SUB. NAME COATING SUB

CITY BATTLE CREEK MI.  
UNIT # ANGELL PLANT OTHER

ID # 36123000 DATE PRINTED 4/09/87  
LOCATION INDOOR /GROUND

### NAMEPLATE DATA

MFG. G.E.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	0A
S/N 8119529	IMPEDENCE	5.83%
KVA 750	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 480	GAL LIQUID	380

### ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
H2O COOLED	NO	BUSHING LOC	SIDE ENCLOSED
OIL PUMPS	NO	RECLAIMER	200 FEET
TOP FPV	1.00 IN	POWER V/A	240/40
BOTTOM FPV	1.00 IN	OTHER ACCESS	

### VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS YES/TFV

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
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### FIELD SERVICE

COLOR LABEL CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
5/00/76					.020 AC	N/A	40 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/79					.020 AC	N/A	39 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83		NORMAL	45 C		.020 AC	N/A		WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
1/07/85		LOW	48 C		.025 AC	N/A		PALE YELD AC	1.540 AC	CLEAR AC	NONE AC
3/26/87		LOW	41 C		.015 AC	N/A	33 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG G.E.

KVA

750

PRIMARY

2,400

SUB NAME COATING SUB

ID # 36125000

S/N 8113529

SECONDARY

480

UNIT # ANGELL PLANT

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PERCENT MOISTURE/DRY WEIGHT	PERCENT MOISTURE SATURATION	AGING FACTOR
12/19/83			45.40			
1/07/85			42.07			
3/26/87			44.40			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
 \* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE OU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB. NAME RIVER SUB ANGELL PLT UNIT # LOW LEFT OTHER

ID # 36125000 DATE PRINTED 4/09/87  
LOCATION INDOOR / GROUND

### NAMEPLATE DATA

MFG. G.E.  
DATE MFG.  
S/N 8037220  
KVA 200  
PRI 2,400  
SEC 480  
EQUIP. TYPE  
TRANS CLASS  
IMPEDENCE  
PHASE/CYCLE  
LIQUID TYPE  
GAL LIQUID  
TRANSFORMER  
DA  
4.70%  
3/60  
ASKAREL  
134

### ADDITIONAL EQUIPMENT

RADIATORS YES  
FANS NO  
H2O COOLED NO  
OIL PUMPS NO  
TOP FPV 1.00 IN  
BOTTOM FPV 1.00 IN  
CONSERVATOR NO  
TAP CHANGER NO  
BUSHING LOC SIDE ENCLOSED  
RECLAIMER 40 FEET  
POWER V/A 240/40  
OTHER ACCESS

### VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS NONE

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE 1242 AROCLOR 1254 AROCLOR 1260 AROCLOR OTHER TOTAL CONTENT

### FIELD SERVICE

COLOR LABEL CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
5/00/76					.030 AC	N/A	43 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/79					.030 AC	N/A	39 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83		NORMAL			.070 AC	N/A		WTR WHITE AC	1.540 AC	CLOUDY QU	NONE AC
1/07/85		LOW	25 C		.035 AC	N/A		PALE YELO AC	1.540 AC	CLOUDY QU	NONE AC
3/26/87		LOW			.020 AC	N/A	37 AC	PALE YELO AC	1.540 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

ID # 36125000

MFG G.E.

KVA

200

PRIMARY

2,400

SUB NAME RIVER SUB ANGELL PLT

UNIT # LOW LEFT

S/N 8037220

SECONDARY

480

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83			22.03			
1/6/85			14.10			
3/26/87			22.79			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE SERVICE

25 C

100 C

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION

CITY

BATTLE CREEK MI

ID # 36125000

DATE PRINTED

4/09/87

SUB. NAME CONVEYOR ANGELL PLT

UNIT #

OTHER

LOCATION

INDOOR /GROUND

### NAMEPLATE DATA

MFG	WEST	EQUIP. TYPE	TRANSFORMER
DATE MFG.		TRANS CLASS	DA
S/N	YOR4085	IMPEDENCE	5.60%
KVA	1,000	PHASE/CYCLE	3/60
PRI	2,400	LIQUID TYPE	A5KAREL
SEC	480	GAL LIQUID	240

### ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
H2O COOLED	NO	BUSHING LOC	SIDE ENCLOSED
OIL PUMPS	NO	RECLAIMER	200 FEET N
TOP FPV	1.00 IN	POWER V/A	240/40
BOTTOM FPV	1.00 IN	OTHER ACCESS	

### VISUAL INSPECTION

PAINT CONDITION FAIR LEAKS YES/RIGHT TOP CORNER

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
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### FIELD SERVICE

COLOR LABEL

CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR	VISUAL	SEDIMENT
5/00/76					.020 AC	N/A	42 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/79			0 C	0.0	.020 AC	N/A	34 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83	NORMAL		38 C	0.2	.010 AC	N/A		WTR WHITE AC	1.560 AC	CLEAR AC	NONE AC
1/07/85	LOW		30 C		.015 AC	N/A		PALE YELD AC	1.520 AC	CLEAR AC	NONE AC
3/26/87	NORMAL		40 C	0.2	.010 AC	N/A	37 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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KEY TO ABBREVIATIONS: AC - ACCEPTABLE QU - QUESTIONABLE UN - UNACCEPTABLE



P.O. BOX 4724, AKRON, OH 44310

TEST SURVEY REDAP

CUST# 26125000		WALDORF CORPORATION		BATTLE CREEK HI		4/10/87	
TO#	SUBSTATION NAME	SIZE KVA	GALLONS LIQUID TYPE	PCB CLASS	PCB DATE	LST GC KF IDP OF SERVICE PRODUCT	
3	CONVEYOR ANGELL PLT	1000	240 ASKAREL PCB			AC AC	REPAIR-SEE VISUAL INSPECTION
4	CONVEYOR ANGELL PLT	1000	424 ASKAREL PCB			AC AC	REPAIR-SEE VISUAL INSPECTION
5	CONVEYOR ANGELL PLT	300	209 ASKAREL PCB			AC AC	ACCEPTABLE DATA-RETEST 1 YEAR
6	CONVEYOR ANGELL PLT	1000	434 ASKAREL PCB			GU AC	RETEST ONE YEAR
7	POWER HOUSE	750	330 ASKAREL PCB			AC AC	REPAIR-SEE VISUAL INSPECTION
8	COATING ROOM SUB	200	115 ASKAREL PCB			AC AC	ACCEPTABLE DATA-RETEST 1 YEAR
9	COATING SUB	750	380 ASKAREL PCB			AC AC	ACCEPTABLE DATA-RETEST 1 YEAR
10	RIVER SUB ANGELL PLT	200	134 ASKAREL PCB			AC AC	ACCEPTABLE DATA-RETEST 1 YEAR

8575158

# DIVISION OF EDWARDS TRANSFORMER CONSULTANTS

724, AKRON, OH 44316

## TEST SURVEY RECAP

CUST# 36125000

WALDORF CORPORATION

BATTLE CREEK MI

4/10

## \* SUMMARY OF RESULTS \*

NOTE: EPA # CFR40-761 states that

any transformer not tested for pcb content ----&gt;

must be considered contaminated (50-500ppm)

TOTAL GALLONS OF LIQUID	2324
TOTAL UNITS NON-PCB	0
TOTAL W/O SDMI PCB TEST	0
TOTAL UNITS CONTAMINATED	0
TOTAL UNITS PCB	8
TOTAL REQUIRING PCB TEST	0
TOTAL REQUIRING SERVICE	0
TOTAL KVA	5200
ESTIMATED VALUE OF UNITS	114,400.00

The national average cost of annual transformer maintenance is  
6 pct of transformer investment. (EPRI JOURNAL, March, 1986). Based  
on the above estimated value of units, average annual maintenance  
for these units would be \$6,864.00

A number of your transformers require service. If you did not receive a quotation with  
these test reports, please call our AKRON office for a comprehensive study and proposal  
to solve the various problems.

KST540



Acts 4:12

# **DIVISION OF SDNIVERS TRANSFORMER CONSULTANTS**

P.O. BOX 4724, CUYAH, OH 44310

Phone: (216) 633-2666  
Toll Free: (800) 321-9580

## TEST SURVEY RECAP

COUNT	38135000	GALLONS CORPORATION	BATTLE CREEK MI	4/19/88						
TOP	SUBSTATION	SIZE	GALLONS LIQUID	POB	LET	ED	MF	TOP	PF	SERVICE
	NAME	NO	TYPE	CLASS	DATE					PRODUCT
3	CONVEYER ARSHELL PLT	800	209	ARMAREL POB		AD	AD			ACCEPTABLE DATA-RETEST 1 YEAR
7	POWER HOUSE	750	600	ARMAREL POB		AS	AD			REPAIR/PAINT: SEE VISUAL DATA
12			50	OIL NON-POB	8/30/88					ACCEPTABLE DATA-RETEST 1 YEAR
13			50	OIL NON-POB	8/30/88					ACCEPTABLE DATA-RETEST 1 YEAR
14			50	OIL NON-POB	8/30/88					ACCEPTABLE DATA-RETEST 1 YEAR
15			50	OIL NON-POB	8/30/88					ACCEPTABLE DATA-RETEST 1 YEAR



Acts 4:12

**DIVISION OF  
EDMVERS**

**TRANSFORMER  
CONSULTANTS**

Phone: (216) 633-2666  
Toll Free: (800) 321-9580

May 23, 1988

Mr. Steve Weers  
Waldorf Corp.  
177 Angell St.  
Battle Creek, MI. 49016

REF: 06194

Gentlemen:

Enclosed are the results of the transformer oils recently tested by our personnel.

Please refer to the section of the test data master sheet for the specific type of tests performed on your oil.

Normal servicing of units that contain PCB's in excess of 50 PPM is restricted by Federal Law. We can, however, lower the PCB concentration to acceptable limits. If you wish to discuss the options available please feel free to contact us.

Should you require further work on some of your transformers, a formal quotation will be forwarded per your request.

If you have any questions on this or any related matter, do not hesitate to contact our Tallmadge, Ohio office (216/633-2666).

Very truly yours,

CRAIG SCHLEY  
REGIONAL SALES

CS/jm

CUST WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB. NAME CONVEYOR ANGELL PLT UNIT # OTHER

ID # 36125000 DATE PRINTED 4/16/88  
LOCATION INDOOR /GROUND

NAMEPLATE DATA

MFG. G.E. EQUIP TYPE TRANSFORMER  
DATE MFG TRANS CLASS OA  
S/N 8637218 IMPEDANCE 4.90%  
KVA 300 PHASE/CYCLE 3/60  
PRI 2,400 LIQUID TYPE ASKAREL  
SEC 208 GAL LIQUID 209

ADDITIONAL EQUIPMENT

RADIATORS YES CONSERVATORS NO  
FANS NO LTC COMP NO  
H<sub>2</sub>O COOLED NO BUSHING LOC SIDE ENCLOSED  
OIL PUMPS NO HOSE LENGTH 200 FEET  
TOP FPV 1.00 IN DE-ENERGIZED  
BOTTOM FPV 1.00 IN POWER V/A 240/40  
OTHER ACCESS

VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS NONE

FIELD SERVICE

PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE 1242 1254 1260 OTHER TOTAL  
AROCLOR AROCLOR AROCLOR CONTENT

COLOR LABEL

CLASS

LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
5/00/76					.025 AC	N/A	46 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/79					.030 AC	N/A	33 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83		NORMAL	30 C		.030 AC	N/A		WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
1/07/85		LOW	30 C		.020 AC	N/A		WTR WHITE AC	1.520 AC	CLEAR AC	NONE AC
3/26/87		LOW	40 C		.020 AC	N/A	34 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
2/10/88		LOW	29 C		.015 AC	N/A	38 AC	PALE YELO AC	1.540 AC	CLOUDY QU	NONE AC
5/30/88		LOW	34 C		.020 AC	N/A	46 AC	PALE YELO AC	1.520 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG G.E.

KVA

300

PRIMARY

2,400

SUB NAME

CONVEYOR ANGELL PLT

UNIT #

ID #

36125000

S/N

8037218

SECONDARY

200

KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	ACID FACTOR
12/19/83		25E	20.73	N/A		
1/07/85		25E	14.13	N/A		
3/26/87			16.70	N/A		
2/10/88		25E	11.50	N/A		
3/30/88		25E	16.50	N/A		

ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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1 A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
2 SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
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CUST WALDORF CORPORATION  
SUB. NAME POWER HOUSE

CITY BATTLE CREEK MI  
UNIT # ANGELL PLANT OTHER

ID # 36125000 DATE PRINTED 4/16/88  
LOCATION INDOOR /GROUND

### NAMEPLATE DATA

MFG. S.E.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	04
S/N 8113528	IMPEDANCE	5.88%
KVA 750	PHASE/CYCLE	3/60
PR1 2,400	LIQUID TYPE	ASKAREL
SEC 480	GAL LIQUID	380

### ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATORS	NO
FANS	NO	LTC COMP	NO
H <sub>2</sub> O COOLED	NO	BUSHING LOC	SIDE ENCLOSED
OIL PUMPS	NO	HOSE LENGTH	200 FEET
TOP FPV	1.00 IN	DE-ENERGIZED	
BOTTOM FPV	1.00 IN	POWER V/A	240/40
OTHER ACCESS			

### VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS YES/BTM GATE VALVE

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
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### FIELD SERVICE

7/85 UTILITY

COLOR LABEL

CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR	VISUAL	SEDIMENT
5/20/79					.087 AC	N/A	88 AC	WTR WHITE AC	1.340 AC	CLEAR AC	NONE AC
11/20/79					.085 AC	N/A	89 AC	WTR WHITE AC	1.340 AC	CLEAR AC	NONE AC
12/19/83	NORMAL	40 D			.049 AC	N/A		PALE YELD AC	1.340 AC	CLEAR AC	NONE AC
1/17/85	LOW	30 D			.040 AC	N/A		PALE YELD AC	1.340 AC	CLEAR AC	NONE AC
6/25/87	NORMAL	45 D			.065 AC	N/A	93 AC	PALE YELD AC	1.340 AC	CLEAR AC	NONE AC
2/10/88	NORMAL	50 D			.015 AC	N/A	48 AC	PALE YELD AC	1.360 AC	CLOUDY QU	NONE AC
6/30/88	NORMAL	45 D			.065 AC	N/A	41 AC	PALE YELD AC	1.320 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDOFF CORPORATION

ID # 861E5000

MFG D E

KVA

750

PRIMARY

2,400

SUB NAME POWER HOUSE

UNIT #

ANGELL PLANT

S/N 3113122

SECONDARY

480

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/OW WEIGHT	PER CENT MOISTURE SATURATION
11/15/83		25C	22.77	N/A	
11/17/83		25C	47.24	N/A	
6/25/87			41.46	N/A	
11/15/88		25C	25.50	N/A	
3/29/89		25C	37.00	N/A	

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
 \* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

# TRANSFORMER CONSULTANTS

A DIVISION OF S.D. MYERS INC.

P. O. BOX 4724, AKRON, OH 44310

DC 0005

CUST WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB NAME CONVEYOR ANGELL PLT UNIT # OTHER

ID # 86125000 DATE PRINTED 8/01/88  
LOCATION INDOOR /GROUND

## NAMEPLATE DATA

MFG S.E.	EQUIP TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	0A
S/N 8113527	IMPEDANCE	5.63%
KVA 1,000	PHASE/CYCLE	3/40
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 450	GAL LIQUID	484

## ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATORS	NO
FANS	NO	LTC COMP	NO
H <sub>2</sub> O COOLED	NO	BUSHING LOC	SIDE ENCLOSED
OIL PUMPS	NO	HOSE LENGTH	200 FEET
TOP FPV	1.00 IN	DE-ENERGIZED	
BOTTOM FPV	1.00 IN	POWER V/A	240/40
OTHER ACCESS			

## VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS NONE

## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
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## FIELD SERVICE

COLOR LABEL CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP	GR.	VISUAL	SEDIMENT
5/30/76					050 AC	N/A	39 AC	WTR WHITE AC	1.540	AC	CLEAR AC	NONE AC
11/00/79					.010 AC	N/A	38 AC	WTR WHITE AC	1.540	AC	CLEAR AC	NONE AC
12/19/85		NORMAL	35 C		050 AC	N/A		WTR WHITE AC	1.520	AC	CLOUDY QU	NONE AC
1/07/85		LOW	30 C		.010 AC	N/A		WTR WHITE AC	1.520	AC	CLOUDY QU	NONE AC
6/20/87		NORMAL	30 C		.010 AC	N/A	38 AC	WTR WHITE AC	1.540	AC	CLOUDY QU	NONE AC
8/10/88		NORMAL	40 C		.015 AC	N/A	36 AC	PALE YELG AC	1.560	AC	CLOUDY QU	NONE AC

CONTENTS FREE WATER AND/OR CLOUDY OIL INDICATES MOISTURE.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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Same as 8113530 1 of 4

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

# TRANSFORMER CONSULTANTS

A DIVISION OF S.D. MYERS INC.

P. O. BOX 4724, AKRON, OH 44310

DC 6064

CUST. WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB. NAME CONVEYOR ANGELL PLT UNIT #

ID # 36123000 DATE PRINTED 3/01/88  
LOCATION INDOOR /GROUND

OTHER

## NAMEPLATE DATA

MFG. S.E. EQUIP. TYPE TRANSFORMER  
DATE MFG. TRANS CLASS DA HT: RA  
S/N 8113330 IMPEDANCE 5.63%  
KVA 1,000 PHASE/CYCLE 3/60 55° inc  
PRI 2,400 LIQUID TYPE ASKAREL  
SEC 484 GAL LIQUID 484

## ADDITIONAL EQUIPMENT

RADIATORS YES CONSERVATORS NO  
FANS NO LTC COMP NO  
H<sub>2</sub>O COOLED NO BUSHING LOC SIDE ENCLOSED  
OIL PUMPS NO HOSE LENGTH 200 FEET  
TOP FPV 1.30 IN DE-ENERGIZED  
BOTTOM FPV 1.00 IN POWER V/A 240/40  
OTHER ACCESS

## VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS YES/TFPV

## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE 1242 AROCLOR 1254 AROCLOR 1250 AROCLOR OTHER TOTAL CONTENT

## FIELD SERVICE

COLOR LABEL CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP	GR.	VISUAL	SEDIMENT
3/00/76					.045 AC	N/A	41 AC	WTR WHITE AC	1.540 AC	AC	CLEAR AC	NONE AC
11/00/79					.045 AC	N/A	40 AC	WTR WHITE AC	1.540 AC	AC	CLEAR AC	NONE AC
12/19/86		LOW	40 C		070 AC	N/A		WTR WHITE AC	1.560 AC	AC	CLEAR AC	NONE AC
1/07/85	XXXXXX	NOT TESTED PER CUSTOMER REQUEST										
3/23/87		LOW	30 C		040 AC	N/A	33 AC	PALE YELD AC	1.540 AC	AC	CLEAR AC	NONE AC
2/10/88		LOW	29 C		015 AC	N/A	33 AC	PALE YELD AC	1.560 AC	AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
------	---------	----------	--------	----------	---------	-----------------	----------------	--------	----------	-----------	-------------------	-----------

Total Wt. 4200 2520 8 ft. H  
2460  
2400 53 D  
2340 60 W  
2280

1 of 4

Bolted tops

# TRANSFORMER CONSULTANTS

A DIVISION OF S.D. MYERS INC.

P.O. BOX 4724, AKRON, OH 44310

DC 0003

CUST. WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB. NAME CONVEYOR ANGELL PLT UNIT # OTHER

ID # 36125000 DATE PRINTED 3/01/88  
LOCATION INDOOR /GROUND

## NAMEPLATE DATA

MFG. WEST EQUIP. TYPE TRANSFORMER  
DATE MFG. TRANS CLASS OA  
S/N YDR4085 762 6594 IMPEDANCE 5.50%  
KVA 1,000 PHASE/CYCLE 3/60  
PRI 2,400 LIQUID TYPE ASKAREL  
SEC 480 BAL LIQUID 240

65° rise

## ADDITIONAL EQUIPMENT

RADIATORS YES CONSERVATORS NO  
FANS NO LTC COMP NO  
H<sub>2</sub>O COOLED NO BUSHING LOC SIDE ENCLOSED  
OIL PUMPS NO HOSE LENGTH 200 FEET  
TOP PPV 1.00 IN DE-ENERGIZED NO  
BOTTOM PPV 1.00 IN POWER V/A 240/40  
OTHER ACCESS

## VISUAL INSPECTION

PAINT CONDITION FAIR LEAKS YES/RIGHT TOP CORNER

## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE 1242 1254 1260 OTHER TOTAL CONTENT  
AROCLOR AROCLOR AROCLOR

## FIELD SERVICE

COLOR LABEL CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
3/00/76					.030 AC	N/A	42 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/75			C	0.0	.020 AC	N/A	34 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83		NORMAL	38 C	0.2	.010 AC	N/A		WTR WHITE AC	1.560 AC	CLEAR AC	NONE AC
1/07/85		LOW	30 C		.015 AC	N/A		PALE YELG AC	1.520 AC	CLEAR AC	NONE AC
3/26/87		NORMAL	40 C	0.2	.010 AC	N/A	37 AC	PALE YELG AC	1.540 AC	CLEAR AC	NONE AC
2/10/88		NORMAL	21 C	0.0	.020 AC	N/A	48 AC	PALE YELG AC	1.540 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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53 W  
65 H  
76 ~~W~~ D

Total Wt. 8900  
BIL 45/30

H<sub>2</sub> H<sub>3</sub> X<sub>1</sub> X<sub>3</sub>

1 of 4

Welded top

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

# TRANSFORMER CONSULTANTS

A DIVISION OF S.D. MYERS INC.

P.O. BOX 4724, AKRON, OH 44310

0005

CUST. WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB. NAME CONVEYOR ANGELL PLT UNIT # OTHER

ID # 56125000 DATE PRINTED 3/01/88  
LOCATION INDOOR / GROUND

## NAMEPLATE DATA

MFG. G.E. EQUIP. TYPE TRANSFORMER  
DATE MFG. TRANS CLASS 04  
S/N 8037212 IMPEDANCE 4.90%  
KVA 300 PHASE/CYCLE 3/60  
PRI 5,400 LIQUID TYPE ASKAREL  
SEC 208 GAL LIQUID 209

441 RA  
55° rise

## ADDITIONAL EQUIPMENT

RADIATORS YES CONSERVATORS NO  
FANS NO LTC COMP NO  
H<sub>2</sub>O COOLED NO BUSHING LOC SIDE ENCLOSED  
OIL PUMPS NO ROSE LENGTH 200 FEET  
TOP PPV 1.00 IN DE-ENERGIZED  
BOTTOM PPV 1.00 IN POWER V/A 240/40  
OTHER ACCESS

## VISUAL INSPECTION

PAINT CONDITION 2000 LEAKS NONE

## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE 1242 AROCLOR 1254 AROCLOR 1260 AROCLOR OTHER TOTAL CONTENT

## FIELD SERVICE

COLOR LABEL CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
3/03/76					.025 AC	N/A	46 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/09/79					.030 AC	N/A	39 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/86		NORMAL	30 C		.030 AC	N/A		WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
1/07/85		LOW	30 C		.020 AC	N/A		WTR WHITE AC	1.520 AC	CLEAR AC	NONE AC
3/24/87		LOW	40 C		.020 AC	N/A	34 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
2/10/86		LOW	29 C		.015 AC	N/A	38 AC	PALE YELD AC	1.540 AC	CLOUDY QU	NONE AC

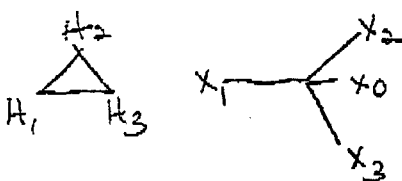
COMMENTS FREE WATER AND/OR CLOUDY OIL INDICATES MOISTURE.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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Belted top  
7200 Total Wt.

48 W  
42 ~~W~~ D  
67 H



1 of 4

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

# TRANSFORMER CONSULTANTS A DIVISION OF S.D. MYERS INC

P.O. BOX 4724, AKRON, OH 44310

0007

CUST. WALDORF CORPORATION  
SUB NAME POWER HOUSE

CITY BATTLE CREEK MI  
UNIT # ARCELL PLANT OTHER

ID # 36125000 DATE PRINTED 3/01/88  
LOCATION 14000R / GROUND

## NAMEPLATE DATA

MFG. D.E  
DATE MFG  
S/N B119328  
KVA 750  
PRI 2,400  
SEC 480  
EQUIP TYPE TRANSFORMER  
TRANS CLASS DA  
IMPEDANCE 5.89%  
PHASE/CYCLE S/Δ  
LIQUID TYPE ASKAPOL  
GAL LIQUID 380

HTI  
RA  
55° rise

## ADDITIONAL EQUIPMENT

RADIATORS YES  
FANS NO  
H<sub>2</sub>O COOLED NO  
OIL PUMPS NO  
TOP FPV 1.00 IN  
BOTTOM FPV 1.00 IN  
OTHER ACCESS  
CONSERVATORS NO  
LTC COMP NO  
BUSHING LOC SIDE ENCLOSED  
HOSE LENGTH 200 FEET  
DE-ENERGIZED  
POWER V/A 240/40

## VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS YES/BTM GATE VALVE

## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE 1242 AROCLOR 1254 AROCLOR 1280 AROCLOR OTHER TOTAL CONTENT

## FIELD SERVICE

7/85 UTILITY

COLOR LABEL CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP GR	VISUAL	SEDIMENT
5/00/76					050 AC	N/A	55 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/03/79					055 AC	N/A	57 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
1E.10/83	NORMAL	43 C			040 AC	N/A		PALE YELD AC	1.540 AC	CLEAR AC	NONE AC
11/07/85	LOW	50 C			040 AC	N/A		PALE YELD AC	1.540 AC	CLEAR AC	NONE AC
5/26/87	NORMAL	43 C			055 AC	N/A	58 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE AC
2/10/88	NORMAL	30 C			015 AC	N/A	42 AC	PALE YELD AC	1.560 AC	CLOUDY QU	NONE AC

COMMENTS FREE WATER AND OR CLOUDY OIL INDICATES MOISTURE.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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41 3 X1 X3

1200 Total Wt.  
TH/TH

1 of 1

2520  
2460  
2400  
2340  
2280

Bolted top

54 W  
88 H  
51 D

KEY TO ABBREVIATIONS: AC - ACCEPTABLE QU - QUESTIONABLE UN - UNACCEPTABLE

**TRANSFORMER CONSULTANTS**  
A DIVISION OF S.D. MYERS INC.

P.O. BOX 4724, AKRON, OH 44310

0010

CUST. WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB NAME RIVER SUB ANGELL PLT UNIT # LOW LEFT OTHER

ID # 26125000 DATE PRINTED 3/01/88  
LOCATION INDOOR /GROUND

**NAMEPLATE DATA**

MFG. S.E. EQUIP. TYPE TRANSFORMER  
DATE MFG. TRANS CLASS DA  
S/N 5037820 IMPEDANCE 4.70%  
KVA 200 PHASE/CYCLE 3/60  
PRI 2,400 LIQUID TYPE ASKAREL  
SEC 480 GAL LIQUID 184

**ADDITIONAL EQUIPMENT**

RADIATORS YES CONSERVATORS NO  
FANS NO LTC COMP NO  
H2O COOLED NO BUSHING LOC SIDE ENCLOSED  
OIL PUMPS NO HOSE LENGTH 40 FEET  
TOP PPV 1.00 IN DE-ENERGIZED  
BOTTOM PPV 1.00 IN POWER V/A 240/40  
OTHER ACCESS

**VISUAL INSPECTION**

PAINT CONDITION GOOD LEAKS YES/BFPV & TSV

**PCB CONTENT / EXPRESSED IN PPM**

DATE OF SERVICE 1242 AROCLOR 1254 AROCLOR 1260 AROCLOR OTHER TOTAL CONTENT

**FIELD SERVICE**

COLOR LABEL CLASS

**LIQUID SCREEN TEST DATA**

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
3/09/76					.030 AC	N/A	43 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/79					.030 AC	N/A	39 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83		NORMAL			.070 AC	N/A		WTR WHITE AC	1.540 AC	CLOUDY QU	NONE AC
1/07/85		LOW	25 C		.095 AC	N/A		PALE YELD AC	1.540 AC	CLOUDY QU	NONE AC
3/26/87		LOW			.020 AC	N/A	37 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE AC
2/10/88		LOW			.015 AC	N/A	36 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

**GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM**

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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BEING REMOVED  
QUOTE REMOVAL COST

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

**TRANSFORMER CONSULTANTS**  
A DIVISION OF S.D. MYERS INC.

P.O. BOX 4724, AKRON, OH 44310

SC 0008

CUST. WALDORF CORPORATION CITY BATTLE CREEK MI ID# 26125000 DATE PRINTED 3/01/88  
SUB. NAME COATING ROOM SUB UNIT# ANGELL PLANT OTHER 3 TOP PLUS LOCATION INDOOR / GROUND

**NAMEPLATE DATA**

MPG. S.E.  
DATE MFG.  
S/N 8037219  
KVA 200  
PRI 2,400  
SEC 200  
EQUIP. TYPE  
TRANS CLASS  
IMPEDANCE  
PHASE/CYCLE  
LIQUID TYPE  
GAL LIQUID  
TRANSFORMER  
GA  
4.65%  
2/60  
ASKAREL  
115

HTI RA  
55 in

**ADDITIONAL EQUIPMENT**

RADIATORS YES  
FANS NO  
H<sub>2</sub>O COOLED NO  
OIL PUMPS NO  
TOP FPV 1.00 IN  
BOTTOM FPV 1.00 IN  
CONSERVATORS NO  
LTC COMP NO  
BUSHING LOC SIDE ENCLOSED  
HOSE LENGTH 200 FEET  
DE-ENERGIZED  
POWER V/A 240/40

OTHER ACCESS

**VISUAL INSPECTION**

PAINT CONDITION FAIR LEAKS NONE

**PCB CONTENT / EXPRESSED IN PPM**

DATE OF SERVICE 1242 AROCLOR 1254 AROCLOR 1260 AROCLOR OTHER TOTAL CONTENT

**FIELD SERVICE**

COLOR LABEL CLASS

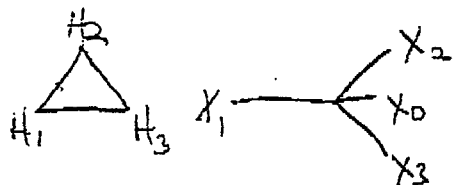
**LIQUID SCREEN TEST DATA**

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR	VISUAL	SEDIMENT
3/00/76					.030 AC	N/A	38 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/79					.030 AC	N/A	35 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83		NORMAL			.020 AC	N/A		WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
1/07/85		NORMAL	15 C		.040 AC	N/A		PALE YELD AC	1.540 AC	CLEAR AC	NONE AC
3/26/87		NORMAL			.020 AC	N/A	32 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE AC
2/10/88		NORMAL			.015 AC	N/A	42 AC	PALE YELD AC	1.560 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

**GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM**

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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5050 Total Wt.

Bolted top

1 of 2

105  
102 1/2  
100  
97 1/2  
95

46 W  
58H  
41 D

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

# TRANSFORMER CONSULTANTS

A DIVISION OF S.D. MYERS INC.

P. O. BOX 4724, AKRON, OH 44310

DC 0007

CUST. WALDORF CORPORATION  
SUB. NAME COATING SUB

CITY BATTLE CREEK MI  
UNIT # ANGELL PLANT OTHER

ID # 36125000 DATE PRINTED 9/01/88  
LOCATION INDOOR / GROUND

## NAMEPLATE DATA

MFG G.E.  
DATE MFG.  
S/N 8019529  
KVA 750  
PRI 6,000  
SEC 480  
EQUIP. TYPE TRANSFORMER  
TRANS CLASS OA  
IMPEDANCE 5.65%  
PHASE/CYCLE 3/60  
LIQUID TYPE ASHRAE  
GAL LIQUID 380

## ADDITIONAL EQUIPMENT

RADIATORS YES  
FANS NO  
H<sub>2</sub>O COOLED NO  
OIL PUMPS NO  
TOP FPV 1.00 IN  
BOTTOM FPV 1.00 IN  
OTHER ACCESS  
CONSERVATORS NO  
LTC COMP NO  
BUSHING LOC SIDE ENCLOSED  
HOSE LENGTH 200 FEET  
DE-ENERGIZED  
POWER V/A 240/40

## VISUAL INSPECTION

PAINT CONDITION FAIR  
LEAKS YES/TFV

## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE 1242 AROCLOR 1254 AROCLOR 1260 AROCLOR OTHER TOTAL CONTENT

## FIELD SERVICE

COLOR LABEL CLASS

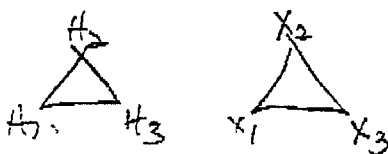
## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP GR	VISUAL	SEDIMENT
3/20/78					020 AC	N/A	40 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/08/79					020 AC	N/A	39 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/80		NORMAL	45 C		020 AC	N/A		WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
1/07/85		LOL	48 C		025 AC	N/A		PALE YELD AC	1.540 AC	CLEAR AC	NONE AC
3/26/87		LOW	41 C		015 AC	N/A	39 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE AC
5/10/88		LOW	45 C		010 AC	N/A	32 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE AC

CONNECTIONS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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Dried

12000 Total wt.

Bolted Top

90 H  
54 W  
52 D

Elevator

96"

Loading Dock Access

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

**TRANSFORMER CONSULTANTS**  
A DIVISION OF S.D. MYERS INC.

P.O. BOX 4724, AKRON, OH 44310

DC 0003

CUST WABORG CORPORATION ID # 36125000  
MFG WEST KVA 1,000 PRIMARY 2,400 SUB NAME CONVEYOR ANGELL PLT UNIT #  
S/N YDA4085 SECONDARY 480

**KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM**

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/15/83		23E	21.07			
1/07/85		23E	11.85			
3/23/87			10.33			
2/10/88		23E	10.00			

**ICP/METALS-IN-OIL/EXPRESSED IN PPM**

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

**LIQUID POWER FACTOR**

DATE	SERVICE	25 C	100 C
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**TRANSFORMER CONSULTANTS**  
A DIVISION OF S.D. MYERS INC.

P.O. BOX 4724, AKRON, OH 44310

DC 0004

CUST WALDOF CORPORATION

ID # 34125000

MFG G.E.

KVA

1,000

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL FLT

UNIT #

S/N

8213533

SECONDARY

480

**KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM**

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/85		25E	35.00			
9/26/87			24.70			
2/10/88		25E	16.00			

**ICP/METALS-IN-OIL/EXPRESSED IN PPM**

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

**LIQUID POWER FACTOR**

DATE	SERVICE	25 C	100 C
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

ID # 36125600

MPB J E

KVA

750

PRIMARY

2,500

SUB NAME POWER HOUSE

UNIT #

ANGELL PLANT

S/N 3113528

SECONDARY

490

KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/ DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83		25E	32.97			
1/27/84		25E	47.20			
3/26/87			41.43			
2/10/88		25E	25.34			

ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
------	---------	----------	------	------	--------	------	--------	-----	------------	---------

A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS

LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

# TRANSFORMER CONSULTANTS

A DIVISION OF S.D. MYERS INC.

P.O. BOX 4724, AKRON, OH 44310

DC 0004

CUST GALTGRF CORPORATION

ID # 36125000

MFG G.E.

KVA

1,000

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL PLT

UNIT #

S/N

0116327

SECONDARY

480

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83		25E	46.73			
1/07/83		23E	22.80			
8/23/87			59.45			
2/10/83		25E	23.00			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
------	---------	----------	------	------	--------	------	--------	-----	------------	---------

A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

**TRANSFORMER CONSULTANTS**  
A DIVISION OF S.D. MYERS INC.

P O BOX 4724, AKRON, OH 44310



CUST WALDOFF CORPORATION

ID # 86125000

MPB J E

KVA

200

PRIMARY

2,400

SUB NAME COATING ROOM SUB

UNIT #

ANGELL PLANT

S/N 6097219

SECONDARY

208

**KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM**

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/88		25E	36.18			
1/17/89		25E	20.80			
3/26/89			54.80			
2.10.88		25E	26.00			

**ICP/METALS-IN-OIL/EXPRESSED IN PPM**

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
------	---------	----------	------	------	--------	------	--------	-----	------------	---------

1 A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
2 SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS

**LIQUID POWER FACTOR**

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS. AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

**TRANSFORMER CONSULTANTS**  
A DIVISION OF E.D. MYERS INC.

P O BOX 4754, AKRON, OH 44310

DC 0009

CUST WALDORF CORPORATION

ID # 34125000

MFG G.E.

KVA

750

PRIMARY

2,400

SUB NAME COATING SUB

UNIT #

ANGELL PLANT

S/N

5113529

SECONDARY

400

**KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM**

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/ DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83		25E	45.40			
1/07/83		25E	42.07			
3/26/87			44.40			
2/10/88		25E	84.50			

**ICP/METALS-IN-OIL/EXPRESSED IN PPM**

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
------	---------	----------	------	------	--------	------	--------	-----	------------	---------

A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

**LIQUID POWER FACTOR**

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

ID # 84125000

MFG G.E

KVA

200

PRIMARY

2,400

SUB NAME RIVER SUB ANGELL PLT

UNIT # LOW LEFT

S/N 8057220

SECONDARY

400

KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/88		85E	22.03			
1/27/85		25E	14.10			
3/28/87			22.70			
2/10/88		25E	14.00			

ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
------	---------	----------	------	------	--------	------	--------	-----	------------	---------

A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS

LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

CUST # 344713

ID # 86125000

MFG S E KVA 300 PRIMARY 2,400 SUB NAME CONVEYOR ANGELL FLT UNIT #  
S/N 8087218 SECONDARY 208

KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT - MOISTURE/ DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12-13-88		25C	20.79			
1-10-89		25C	14.15			
8-28-87			16.70			
2-10-88		25C	11.50			

ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
------	---------	----------	------	------	--------	------	--------	-----	------------	---------

A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE


**DIVISION OF  
EDN YERS** **TRANSFORMER  
CONSULTANTS**

Phone: (216) 633-2666  
Toll Free: (800) 321-9580

RE: PCB CONTENT RESULTS

Gentlemen:

Enclosed with this letter are the results of your PCB tests.

Please note that the Federal Register (vol. 44, no. 106, May 31, 1979, p. 31517) defines these three classes of transformers: (1) PCB transformers (those units containing 500 PPM or greater PCB's); (2) PCB-contaminated transformers (those units containing 50-500 PPM PCB) and (3) non-PCB transformers (those units containing less than 50 PPM PCB).

We have provided as an additional service to you color-coded labels for your transformers. These colors are: (1) YELLOW...for PCB equipment; (2) ORANGE...for PCB-contaminated equipment, and (3) GREEN...for non-PCB equipment. Only those units in category (1), PCB equipment, are required by the EPA to have labels.

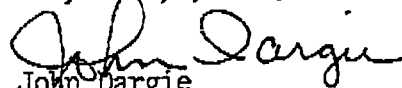
The Same Federal Register (pg. 31538) states: 'EPA will not consider it to be good judgement to assume that the sample has less than 50 PPM PCB because the experimental error of the procedure overlaps the cut-off point. Through experimental data and by cross-checking with other laboratories, we have determined a deviation of plus or minus 10%. For this reason, we have established our limits as below 45 PPM for non-PCBs, 45-450 PPM for PCB-contaminated oil and 450+ for PCB transformer oil.

A point to remember is that all samples other than transformer oil are classified as PCB's at 50 PPM or more.

A few of your test results may be reported using the following terms or abbreviations:

- ND - None Detected
- Trace - Less than 1 PPM
- UP - Unidentified Peaks - the result from the chromatograms displayed major peaks NOT ASSOCIATED with PCB's normally found in electrical transformer fluid.

Very truly yours,

  
John Dargie  
Regional Sales Manager

JD/su

Enclosures: Updated masters -- file and discard any prior copies  
Colored labels -- apply to respective transformer

P.O. Box 4724  
Akron, Ohio 44310  
Phone: (216) 633-2666  
Toll Free: (800) 321-9580

March 15, 1988

Mr. Steve Weers  
Waldorf Corp.  
177 Angell St.  
Battle Creek, MI. 49016

REF: Verbal

Gentlemen:

Enclosed are the results of the transformer oils recently tested by our personnel.

Please refer to the section of the test data master sheet for the specific type of tests performed on your oil.

Normal servicing of units that contain PCB's in excess of 50 PPM is restricted by Federal Law. We can, however, lower the PCB concentration to acceptable limits. If you wish to discuss the options available please feel free to contact us.

Should you require further work on some of your transformers, a formal quotation will be forwarded per your request.

If you have any questions on this or any related matter, do not hesitate to contact our Tallmadge, Ohio office (216/633-2666).

Very truly yours,

CRAIG SCHLEY  
REGIONAL SALES

CS/jm



Acts 4:12

**DIVISION OF  
EDMUNDS**

**TRANSFORMER  
CONSULTANTS**

P.O. BOX 4724, AKRON, OH 44310

Phone: (216) 633-2666  
Toll Free: (800) 321-9580

TEST SURVEY RECAP

CUST# 36125000

WALDORF CORPORATION

BATTLE CREEK MI

3/03/83

\* SUMMARY OF RESULTS \*

NOTE: EPA & CFR40-761 states that  
any transformer not tested for pcb content ---->  
must be considered contaminated (30-500ppm)

TOTAL GALLONS OF LIQUID	2826
TOTAL UNITS NON-PCB	0
TOTAL W/O EDM PCB TEST	0
TOTAL UNITS CONTAMINATED	0
TOTAL UNITS PCB	6
TOTAL REQUIRING PCB TEST	0
TOTAL REQUIRING SERVICE	7
TOTAL KVA	5200
ESTIMATED VALUE OF UNITS	114,400.00

The national average cost of annual transformer maintenance is  
6 pct of transformer investment. (EPRI JOURNAL, March, 1986). Based  
on the above estimated value of units, average annual maintenance  
for these units would be \$6,864.00

A number of your transformers require service. If you did not receive a quotation with  
these test reports, please call our AKRON office for a comprehensive study and proposal  
to solve the various problems.

M57340



Acts 4:12

**DIVISION OF  
SD Myers** **TRANSFORMER  
CONSULTANTS**

P.O. BOX 4724, AKRON, OH 44310

Phone: (216) 633-2666  
Toll Free: (800) 321-9580

## TEST SURVEY RECAP

CUST# 30125000

WALDORF CORPORATION

BATTLE CREEK MI

5/05/88

TC#	SUBSTATION NAME	SIZE KVA	GALLONS LIQUID TYPE	PCB CLASS	PCB DATE	LST GC KF ICP PF	SERVICE PRODUCT
3	CONVEYOR ANGELL PLT	1000	240 ASKAREL PCB			AC AC	REPAIR/PAINT: SEE VISUAL DATA
4	CONVEYOR ANGELL PLT	1000	434 ASKAREL PCB			AC AC	REPAIR/PAINT: SEE VISUAL DATA
5	CONVEYOR ANGELL PLT	300	209 ASKAREL PCB			QU AC	DEHYDRATION
6	CONVEYOR ANGELL PLT	1000	434 ASKAREL PCB			QU AC	DEHYDRATION
7	POWER HOUSE	750	330 ASKAREL PCB			QU AC	REPAIR/PAINT: SEE VISUAL DATA DEHYDRATION
8	COATING ROOM SUB	200	115 ASKAREL PCB			AC AC	ACCEPTABLE DATA-RETEST 1 YEAR
9	COATING SUB	750	330 ASKAREL PCB			AC AC	REPAIR/PAINT: SEE VISUAL DATA
10	RIVER SL3 ANGELL PLT	200	134 ASKAREL PCB			AC AC	REPAIR/PAINT: SEE VISUAL DATA

MST540

Post-It™ brand fax transmittal memo 7571		# of pages » 6
To Gary Kaziukewicz	From DON OPALA	
Co. WALDORF-ST. PAUL	Co. Waldorf - B. C.	
Dept.	Phone # 616 963 5511	
Fax # 612-641-4791	Fax # 616-963-5564	

Attached are the  
missing 5 pages.



# GE Industry Sales & Services

## Conditions of Sale for Services

GEISS Form 487(CS)

The sale of any service and incidental goods ordered by the Customer is expressly conditioned upon the terms and conditions contained or referred to herein. Any additional or different terms and conditions set forth in the Customer's purchase order or similar communication are objected to and will not be binding upon GE Industry Sales & Services (herein called GE) unless specifically assented to in writing by GE's authorized representative. Authorization by the Customer, whether written or oral, to furnish services and incidental goods will constitute acceptance of these terms and conditions.

### 1. SERVICE DEFINITIONS

- a. **COMPLETE INSTALLATION/MAINTENANCE/CONSTRUCTION** is any combination of planning, management, labor, tools and incidental goods to move, install, assemble, modify, repair, modernize, start-up and/or maintain equipment.
- b. **FIELD ENGINEERING** is engineering and technical guidance, advice and counsel based upon GE's current engineering, manufacturing, installation and operating practices, as related to work performed by others.
- c. **JOB MANAGEMENT** is any combination of planning, scheduling, monitoring, selection of crews, as specified in the contract documents, but does not include responsibility for supervision of labor or for the quality or acts of craft labor.
- d. **TRAINING** is an instructional course prepared and provided by personnel proficient in the subject matter.
- e. **ENGINEERING STUDY/INSPECTION/TEST** is system design and analysis of equipment or systems by competent, experienced personnel using special techniques, instruments or devices with the objective of reporting opinions or recommendations relating to the current condition and future serviceability of the equipment or system.
- f. **PCB SERVICE** is any combination of relocation, testing, containment, retrofit/refill or retrofit/replacement of PCB material.

### 2. WARRANTY

- a. GE warrants to the Customer that goods and services sold will be free from defects in material and workmanship and will conform to any mutually agreed upon specifications. If any failure to meet this warranty appears within one year from the date of shipment of the goods or completion of the services, on the condition that GE be promptly notified in writing thereof, GE will correct any such failure by reperforming any defective portion of the services furnished and supplying conforming goods. If the contract covers complete installation, maintenance or construction, GE will correct the failure by reperforming any defective service, and either repairing or replacing (at its option) any defective goods furnished and any damage to the equipment upon which the service was performed resulting from defective service. If reperformance is not practicable, GE will furnish without charge services in an amount essentially equal to those which, in GE's sole judgement, would have been required for reperformance. If the contract covers job management, GE's sole obligation will be to replace the job manager for the balance of the job. If the contract covers training, GE's sole obligation will be to replace the assigned instructor and reperform the training.
- b. The preceding paragraph a. sets forth the exclusive remedy for all claims based on failure of, or defect in, goods or services sold hereunder, whether the failure or defect arises before or during the warranty period, and whether a claim, however instituted, is based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise. The foregoing warranty is exclusive and is in lieu of all other warranties whether written, oral, implied or statutory. **AS TO ALL GOODS SOLD, NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PARTICULAR PURPOSE SHALL APPLY.**

### 3. PATENTS

- a. GE warrants that the goods sold hereunder, and any part thereof, shall be delivered free of any rightful claim of any third party for infringement of any United States patent. If notified promptly in writing and given authority, information and assistance, GE shall defend, or may settle, at its expense, any suit or proceeding against the Customer based on a claimed infringement which would result in a breach of this warranty, and GE shall pay all damages and costs awarded therein against the Customer due to such breach. In case any goods are in such suit held to constitute such an infringement and the use for the purpose intended of said goods is enjoined, GE shall, at its expense and option, either procure for the Customer the right to continue using said goods, or replace same with noninfringing goods, or modify same so they become noninfringing, or remove the goods and refund the purchase price (less reasonable depreciation for any period of use) and any transportation costs separately paid by the Customer. The foregoing states the entire liability of GE for patent infringement.
- b. The preceding paragraph a. shall not apply to any goods specified by the Customer and not of GE manufacture, or manufactured to the Customer's design, or to the use of any goods furnished hereunder in conjunction with any other goods in a combination not furnished by GE as a part of the transaction. As to any such goods, or use in such combination, GE assumes no liability whatsoever for patent infringement and the Customer will hold GE harmless against any infringement claim arising therefrom.

### 4. EXCUSABLE DELAYS

- a. GE shall not be liable for delay due to: (1) causes beyond its reasonable control, or (2) acts of God, acts of the Customer, prerequisite work by others, acts of civil or military authority, government priorities, fires, strikes or other labor disturbances, floods, epidemics, war, riot, delays in transportation or car shortages, or (3) inability to obtain or delay in obtaining, due to causes beyond its reasonable control, suitable labor, materials, or facilities. In the event of any such delay, the time of performance shall be extended for a period equal to the time lost by reason of the delay.
- b. In the event GE is delayed by acts of the Customer or by prerequisite work by other contractors or suppliers of the Customer, GE shall be entitled to an equitable price adjustment in addition to extension of the time of performance.

### 5. SALES AND SIMILAR TAXES

In addition to the price specified herein, the Customer shall pay, or reimburse GE for, the gross amount of any present or future sales, use, excise, value-added or other similar tax applicable to the price, sale or furnishing of any services or goods hereunder, or to their use by GE or the Customer, or the Customer shall provide GE with evidence of exemption acceptable to the taxing authorities.

### 6. PAYMENTS AND FINANCIAL CONDITION

- a. Pro rata payments shall become due as shipments are made or as work is completed. If GE consents to delayed shipments of goods, payment shall become due on the date when GE is prepared to make shipment. All payments shall be made without set-off for claims arising out of other sales by GE.
- b. If the financial condition of the Customer at any time does not, in the judgment of GE, justify continued performance on the terms of payment previously agreed upon, GE may require full or partial payment in advance or shall be entitled to terminate the contract and receive

(Continued on reverse)



# GE Industry Sales & Services

## Supplemental Conditions for PCB Services

For PCB Services, the conditions contained herein shall supplement the CONDITIONS OF SALE, GEISS Form 487(CS):

### 1. DEFINITIONS

a. "PCB Service" shall mean the service described in the attached quotation or contract to the extent that such services involve a PCB Material. PCB Service may include removal, disposal, repair, testing, clean-up, replacement of insulating fluids and all other activities (such as transportation, storage, etc.) incident thereto.

b. "PCB Material" shall mean the equipment or other material containing or contaminated with polychlorinated biphenyl (PCB) identified in the attached quotation or contract as well as all the parts and the contents thereof and all material used in the performance of the PCB Service which comes into contact with PCB Material.

c. "Release" shall mean with respect to the PCB Material the intentional or unintentional spilling, migration or escape of the PCB Material or any part thereof either alone or in connection with any other substance, including, but not limited to, water, air and smoke.

### 2. PCB MATERIAL TERMS

a. GE represents that it has knowledge of the requirements associated with the use, collection, handling, storage, transportation and disposal of the PCB Material; that it has experience in such use, collection, handling, storage, transportation and disposal; and that it shall have instructed its personnel, subcontractors and agents in the proper procedures to be used in the performance of PCB Service.

b. GE will perform the PCB Service in compliance with any and all federal, state and local laws and regulations pertaining thereto, including but not limited to, the regulations contained in 40 CFR Part 761; and will have obtained all licenses and permits required by law to engage in the activities necessary to perform the PCB Service.

c. GE warrants that storage, transportation and disposal of the PCB Material will be done by means of facilities and vehicles which are fully licensed by appropriate federal, state and local authorities, as required.

d. The Customer warrants that it has full legal title to, or the power and right to transfer title to, the PCB Material (including, without limitation, all licenses or permits required by law or regulation to be obtained by the owner and/or generator of the material), and that the Customer has no knowledge that the PCB Material is not as otherwise described in the contract documents.

e. If the Customer provides containers for transportation and/or storage of the PCB Materials, such containers shall comply with all applicable law. GE's sole remedy for the Customer's default under this paragraph is, that upon discovery of one or more non-complying containers, GE may provide complying containers and charge the Customer for the containers, the labor needed to transfer the PCB Material into complying containers, and any additional disposal charges.

f. To the extent that any PCB Material is to be disposed of, GE will take title to such PCB Material when it is loaded on a transport vehicle provided by GE or when the PCB Material is delivered to a GE facility, whichever is earlier. If GE and Customer have agreed in writing that title will pass at an earlier time, such agreement will govern. GE takes title to the PCB Material only for the purpose of disposal and shall not

use or transfer title to the PCB Material for any other purpose. In the event that the PCB Material is later determined to be of a nature or character different from that described in the contract documents, title shall pass back to the Customer and, unless otherwise agreed, GE may return the PCB material to the Customer at the Customer's expense and the Customer shall be liable for and shall indemnify GE against all losses, damages and claims caused by the PCB material including any damage to the environment, except to the extent that such losses, damages or claims are the result of the negligent or other illegal act or omission of GE or its subcontractors.

g. Unless the Customer has otherwise advised GE in writing before commencement of the PCB Service, the Customer represents that any of the PCB material which is to be disposed of has not been in storage for disposal or out of service prior to the start of work. The Customer shall indemnify GE against all loss, cost and liability, including fines, penalties, attorneys' fees and costs of defense and extra costs of disposal, on account of any failure of GE to cause the disposal of any PCB material prior to one year after the PCB Material first went into storage for disposal because of reliance on the representation described in the preceding sentence or on any false or mistaken representation by the Customer concerning the date when the PCB material first went into storage for disposal.

h. Unless otherwise agreed or required by law, GE will not test the PCB Material to determine the level of PCB concentration without the prior consent of the Customer. Unless there is a determination of PCB concentration made or accepted by GE:

- (1) GE may charge the disposal price for PCB Material of the highest concentration;
- (2) GE may use special procedures to prevent contamination of its facilities and equipment and make an appropriate extra charge for such service; and
- (3) GE shall not be liable to the Customer for any level of PCB concentration revealed by a subsequent test.

i. The following rules apply in the case of any replacement of insulating fluid for the purpose of reclassifying any equipment under 40CFR 761.30(a)(2)(v), (b)(2)(vi) or (h)(2)(v):

- (1) Unless otherwise agreed, the Customer shall be responsible for operating the equipment as required by regulation or otherwise during a 90-day in-service period.
- (2) GE will test to determine the level of PCB concentration prior to fluid replacement and will make a compliance retest after the 90-day in-service period.
- (3) GE guarantees that the PCB concentration shown by a compliance retest will not exceed the concentration level stated in the contract documents, or, if no level is stated, then, that the PCB concentration will be such that the equipment will be reclassified to the next lower class. The Customer's sole remedy for a breach of this guarantee is that GE will reperform the service to achieve the results guaranteed. GE shall not be responsible for any increase in PCB concentration shown by testing after a successful compliance retest.

j. Subject to the provisions of paragraph 2.k. below, in the event of the failure by GE, its employees, agents and subcontractors to comply with any applicable federal, state or municipal law, regulation or rule which directly or indirectly regulates or affects the use, collection, handling, storage, transportation or disposal of the PCB Material; or the release of all or any part of the PCB material prior to the completion of the

(Continued on reverse)

**DNR**  
**MICHIGAN DEPARTMENT**  
**OF NATURAL RESOURCES**

DO NOT WRITE IN THIS SPACE  
ATT. ☐ DIS. ☐ REJ. ☐ PR ☐

0004  
Required under authority of Act 44, PA 1070, as amended and Act 136, PA 1969.  
Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, PA 1969.

Please print or type.

Form Approved OMB No. 2050-0039 Expires 9-30-8

**UNIFORM HAZARDOUS WASTE MANIFEST**

1. Generator's US EPA ID No. **MI 4210013158** Manifest: **Waldorf Paper**  
2. Page 1 of 1 Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address  
**WALDORF PAPER**  
**177 ANGELL ST.**  
**BATTLE CREEK, MI 49016**  
4. Generator's Phone: **616 963-5511**  
5. State Generator's ID: **MI 4210013158**

6. Transporter 1 Company Name: **GENERAL ELECTRIC COMPANY**  
7. Transporter 1 US EPA ID Number: **OH D004527008**  
8. State Transporter's ID: **OH D004527008**  
9. Transporter 2 Company Name:   
10. Transporter 2 US EPA ID Number:   
11. State Transporter's ID:   
12. Transporter's Phone:   
13. State Facility's ID:   
14. Facility's Phone: **216-883-1000**

9. Designated Facility Name and Site Address  
**GENERAL ELECTRIC COMPANY**  
**4477 EAST 49TH STREET**  
**CLEVELAND, OHIO 44125**  
10. US EPA ID Number: **OH D004527008**  
11. State Facility's ID:   
12. Facility's Phone: **216-883-1000**

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER)  
**HAZARDOUS SUBSTANCE, LIQUID, N.O.S., ORM-E**  
**NA9188, RQ, (POLYCHLORINATED BIPHENYLS)**  
12. Containers: **01-011**  
13. Total Quantity: **0.51000**  
14. Unit: **Wt**  
15. Waste No.: **016211**  
16. N/H: **1**

15. Special Handling Instructions and Additional Information  
**DIKE AND CONTAIN SPILLS, AVOID SKIN CONTACT, GE REF# 60891**

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: **Stephen M. Weers**  
Signature: **Stephen M. Weers**  
Date: **16/3/08**

17. Transporter 1 Acknowledgement of Receipt of Materials  
Printed/Typed Name: **FRED. MONTON**  
Signature: **Fred Monton**  
Date: **16/3/08**

18. Transporter 2 Acknowledgement of Receipt of Materials  
Printed/Typed Name:   
Signature:   
Date:   
19. Discrepancy Indication Space:   
20. Facility Owner or Operator. Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.  
Printed/Typed Name:   
Signature:   
Date:   
EPA Form 8700-22 (Rev. 9/86)

To be mailed by Generator to: Michigan DNR  
Box 30038  
Lansing, MI 48909

DEC 20 199 10:43

FR 5110 Rev. 9/85

ALL BILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-202-4708 OR OUT OF STATE AT 617-323-7860 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY



*GE Industry  
Sales & Services*

## Certificate of Disposal

General Electric Company certifies  
that all material received from

WALDORF PAPER

described on

00901

JUNE 30, 1988

Manifest Number \_\_\_\_\_ Dated \_\_\_\_\_ was  
disposed of at the following Disposal Sites:

TRANSFORMER DISPOSED AT: ENVIROSAFE SERVICES OF IDAHO  
10 1/2 MILES, NW, GRANDVIEW, IDAHO 63624  
EPA ID NUMBER: ID0073114654  
MANIFEST DOCUMENT NUMBER: 00913

Authorized Signature  
PCB FACILITY SUPERVISOR

Title

4477 EAST 49TH STREET

Street Address

CLEVELAND

OHIO

44125

City

State

Zip

**ENVIROSAFE SERVICES OF IDAHO, INC.**

May 24, 1989

General Electric CompanyCleveland Apparatus Service  
4477 East 49th StreetCleveland, OH 44125ATTENTION: Mr. Paul BenderSUBJECT: CERTIFICATE OF DISPOSAL

<u>MANIFEST#</u>	<u>DATE RECEIVED</u>	<u>DATE DISPOSED</u>	<u>MATERIALS</u>
00905	07-05-88	07-05-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00913	07-21-88	07-22-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00943	08-08-88	08-08-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00946	08-08-88	08-10-88 <i>posted</i>	PCB D & F Transformers
00958	08-16-88	08-16-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums
00976	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums/ Drum Solids
00977	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers

Specific material as identified by the above Manifest Document Number(s), has been received and disposed of at our landfill facility located in Grand View, Idaho in accordance with contract.

If you have any questions or need additional information feel free to contact me in the Boise office at (208) 384-1500.

Sincerely,

Ida Larson  
Accounts Receivable

1263

Post-It™ brand fax transmittal memo 7571		# of pages » 6
To	Gary Kaziukewicz	
From	DON OPALA	
Co.	WALDORF - St. Paul	
Co.	Waldorf - B. C.	
Dept.		
Phone #	616-963-5511	
Fax #	616-963-5564	

Attached are the  
missing 5 pages.



## GE Industry Sales & Services

### Conditions of Sale for Services

The sale of any service and incidental goods ordered by the Customer is expressly conditioned upon the terms and conditions contained or referred to herein. Any additional or different terms and conditions set forth in the Customer's purchase order or similar communication are objected to and will not be binding upon GE Industry Sales & Services (herein called GE) unless specifically assented to in writing by GE's authorized representative. Authorization by the Customer, whether written or oral, to furnish services and incidental goods will constitute acceptance of these terms and conditions.

#### 1. SERVICE DEFINITIONS

a. **COMPLETE INSTALLATION/MAINTENANCE/CONSTRUCTION** is any combination of planning, management, labor, tools and incidental goods to move, install, assemble, modify, repair, modernize, start-up and/or maintain equipment.

b. **FIELD ENGINEERING** is engineering and technical guidance, advice and counsel based upon GE's current engineering, manufacturing, installation and operating practices, as related to work performed by others.

c. **JOB MANAGEMENT** is any combination of planning, scheduling, monitoring, selection of crews, as specified in the contract documents, but does not include responsibility for supervision of labor or for the quality or acts of craft labor.

d. **TRAINING** is an instructional course prepared and provided by personnel proficient in the subject matter.

e. **ENGINEERING STUDY/INSPECTION/TEST** is system design and analysis of equipment or systems by competent, experienced personnel using special techniques, instruments or devices with the objective of reporting opinions or recommendations relating to the current condition and future serviceability of the equipment or system.

f. **PCB SERVICE** is any combination of relocation, testing, containment, retrofit/refill or retrofit/replacement of PCB material.

#### 2. WARRANTY

a. GE warrants to the Customer that goods and services sold will be free from defects in material and workmanship and will conform to any mutually agreed upon specifications. If any failure to meet this warranty appears within one year from the date of shipment of the goods or completion of the services on the condition that GE be promptly notified in writing thereof, GE will correct any such failure by reperforming any defective portion of the services furnished and supplying conforming goods. If the contract covers complete installation, maintenance or construction, GE will correct the failure by reperforming any defective service, and either repairing or replacing (at its option) any defective goods furnished and any damage to the equipment upon which the service was performed resulting from defective service. If reperformance is not practicable, GE will furnish without charge services in an amount essentially equal to those which, in GE's sole judgement, would have been required for performance. If the contract covers job management, GE's sole obligation will be to replace the job manager for the balance of the job. If the contract covers training, GE's sole obligation will be to replace the assigned instructor and reperform the training.

b. The preceding paragraph a sets forth the exclusive remedy for all claims based on failure of, or defect in, goods or services sold hereunder, whether the failure or defect arises before or during the warranty period and whether a claim, however instituted, is based on contract, indemnity, warranty tort (including negligence), strict liability or otherwise. The foregoing warranty is exclusive and is in lieu of all other warranties, whether written or oral, implied or statutory. **AS TO ALL GOODS SOLD, NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PARTICULAR PURPOSE SHALL APPLY.**

#### 3. PATENTS

a. GE warrants that the goods sold hereunder, and any part thereof shall be delivered free of any rightful claim of any third party for infringement of any United States patent. If notified promptly in writing and given authority, information and assistance, GE shall defend, or may settle, at its expense, any suit or proceeding against the Customer based on a claimed infringement which would result in a breach of this warranty, and GE shall pay all damages and costs awarded therein against the Customer due to such breach. In case any goods are in such suit held to constitute such an infringement and the use for the purpose intended of said goods is enjoined, GE shall, at its expense and option, either procure for the Customer the right to continue using said goods or replace same with noninfringing goods, or modify same so they become noninfringing, or remove the goods and refund the purchase price (less reasonable depreciation for any period of use) and any transportation costs separately paid by the Customer. The foregoing states the entire liability of GE for patent infringement.

b. The preceding paragraph a. shall not apply to any goods specified by the Customer and not of GE manufacture, or manufactured to the Customer's design, or to the use of any goods furnished hereunder in conjunction with any other goods in a combination not furnished by GE as a part of the transaction. As to any such goods, or use in such combination, GE assumes no liability whatsoever for patent infringement and the Customer will hold GE harmless against any infringement claim arising therefrom.

#### 4. EXCUSABLE DELAYS

a. GE shall not be liable for delay due to (1) causes beyond its reasonable control, or (2) acts of God, acts of the Customer, prerequisite work by others, acts of civil or military authority, government priorities, fires, strikes or other labor disturbances, floods, epidemics, war, riot, delays in transportation or car shortages, or (3) inability to obtain or delay in obtaining, due to causes beyond its reasonable control, suitable labor, materials, or facilities. In the event of any such delay the time of performance shall be extended for a period equal to the time lost by reason of the delay.

b. In the event GE is delayed by acts of the Customer or by prerequisite work by other contractors or suppliers of the Customer, GE shall be entitled to an equitable price adjustment in addition to extension of the time of performance.

#### 5. SALES AND SIMILAR TAXES

In addition to the price specified herein, the Customer shall pay, or reimburse GE for, the gross amount of any present or future sales use, excise, value-added or other similar tax applicable to the price, sale or furnishing of any services or goods hereunder, or to their use by GE or the Customer, or the Customer shall provide GE with evidence of exemption acceptable to the taxing authorities.

#### 6. PAYMENTS AND FINANCIAL CONDITION

a. Pro rata payments shall become due as shipments are made or as work is completed. If GE consents to delayed shipments of goods, payment shall become due on the date when GE is prepared to make shipment. All payments shall be made without set-off for claims arising out of other sales by GE.

b. If the financial condition of the Customer at any time does not, in the judgment of GE, justify continued performance on the terms of payment previously agreed upon, GE may require full or partial payment in advance or shall be entitled to terminate the contract and receive

(Continued on reverse)



# GE Industry Sales & Services

## Supplemental Conditions for PCB Services

For PCB Services, the conditions contained herein shall supplement the CONDITIONS OF SALE, GEISS Form 487(CS):

### 1. DEFINITIONS

a. "PCB Service" shall mean the service described in the attached quotation or contract to the extent that such services involve PCB Material. PCB Service may include removal, disposal, repair, testing, clean-up, replacement of insulating fluids and all other activities (such as transportation, storage, etc.) incident thereto.

b. "PCB Material" shall mean the equipment or other material containing or contaminated with polychlorinated biphenyl (PCB) identified in the attached quotation or contract as well as all the parts and the contents thereof and all material used in the performance of the PCB Service which comes into contact with PCB Material.

c. "Release" shall mean with respect to the PCB Material the intentional or unintentional spilling, migration or escape of the PCB Material or any part thereof either alone or in connection with any other substance, including, but not limited to, water, air and smoke.

### 2. PCB MATERIAL TERMS

a. GE represents that it has knowledge of the requirements associated with the use, collection, handling, storage, transportation and disposal of the PCB Material; that it has experience in such use, collection, handling, storage, transportation and disposal; and that it shall have instructed its personnel, subcontractors and agents in the proper procedures to be used in the performance of PCB Service.

b. GE will perform the PCB Service in compliance with any and all federal, state and local laws and regulations pertaining thereto, including but not limited to, the regulations contained in 40 CFR Part 761; and will have obtained all licenses and permits required by law to engage in the activities necessary to perform the PCB Service.

c. GE warrants that storage, transportation and disposal of the PCB Material will be done by means of facilities and vehicles which are fully licensed by appropriate federal, state and local authorities, as required.

d. The Customer warrants that it has full legal title to, or the power and right to transfer title to, the PCB Material (including, without limitation, all licenses or permits required by law or regulation to be obtained by the owner and/or generator of the material), and that the Customer has no knowledge that the PCB Material is not as otherwise described in the contract documents.

e. If the Customer provides containers for transportation and/or storage of the PCB Materials, such containers shall comply with all applicable law. GE's sole remedy for the Customer's default under this paragraph is, that upon discovery of one or more non-complying containers, GE may provide complying containers and charge the Customer for the containers, the labor needed to transfer the PCB Material into complying containers, and any additional disposal charges.

f. To the extent that any PCB Material is to be disposed of, GE will take title to such PCB Material when it is loaded on a transport vehicle provided by GE or when the PCB Material is delivered to a GE facility, whichever is earlier. If GE and Customer have agreed in writing that title will pass at an earlier time, such agreement will govern. GE takes title to the PCB Material only for the purpose of disposal and shall not

use or transfer title to the PCB Material for any other purpose. In the event that the PCB Material is later determined to be of a nature or character different from that described in the contract documents, title shall pass back to the Customer and, unless otherwise agreed, GE may return the PCB material to the Customer at the Customer's expense and the Customer shall be liable for and shall indemnify GE against all losses, damages and claims caused by the PCB material including any damage to the environment, except to the extent that such losses, damages or claims are the result of the negligent or other illegal act or omission of GE or its subcontractors.

g. Unless the Customer has otherwise advised GE in writing before commencement of the PCB Service, the Customer represents that any of the PCB material which is to be disposed of has not been in storage for disposal or out of service prior to the start of work. The Customer shall indemnify GE against all loss, cost and liability, including fines, penalties, attorneys' fees and costs of defense and extra costs of disposal, on account of any failure of GE to cause the disposal of any PCB material prior to one year after the PCB Material first went into storage for disposal because of reliance on the representation described in the preceding sentence or on any false or mistaken representation by the Customer concerning the date when the PCB material first went into storage for disposal.

h. Unless otherwise agreed or required by law, GE will not test the PCB Material to determine the level of PCB concentration without the prior consent of the Customer. Unless there is a determination of PCB concentration made or accepted by GE:

- (1) GE may charge the disposal price for PCB Material of the highest concentration;
- (2) GE may use special procedures to prevent contamination of its facilities and equipment and make an appropriate extra charge for such service; and
- (3) GE shall not be liable to the Customer for any level of PCB concentration revealed by a subsequent test.

i. The following rules apply in the case of any replacement of insulating fluid for the purpose of reclassifying any equipment under 40CFR 761.30(a)(2)(v), (b)(2)(vii) or (h)(2)(vi):

- (1) Unless otherwise agreed, the Customer shall be responsible for operating the equipment as required by regulation or otherwise during a 90-day in-service period.
- (2) GE will test to determine the level of PCB concentration prior to fluid replacement and will make a compliance retest after the 90-day in-service period.
- (3) GE guarantees that the PCB concentration shown by a compliance retest will not exceed the concentration level stated in the contract documents, or, if no level is stated, then, that the PCB concentration will be such that the equipment will be reclassified to the next lower class. The Customer's sole remedy for a breach of this guarantee is that GE will reperform the service to achieve the results guaranteed. GE shall not be responsible for any increase in PCB concentration shown by testing after a successful compliance retest.

j. Subject to the provisions of paragraph 2.k. below, in the event of the failure by GE, its employees, agents and subcontractors to comply with any applicable federal, state or municipal law, regulation or rule which directly or indirectly regulates or affects the use, collection, handling, storage, transportation or disposal of the PCB Material; or the release of all or any part of the PCB material prior to the completion of the

(Continued on reverse)

**DNR**  
**MICHIGAN DEPARTMENT**  
**OF NATURAL RESOURCES**

DO NOT WRITE IN THIS SPACE

ATT. ☐ DIS. ☐ REJ. ☐ PR ☐

1979, as amended and Act 136, P.A. 1969.  
Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, P.A. 1969.

Please print or type.

Form Approved OMB No. 2050-0039 Expires 9-30-88

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		Generator's US EPA ID No. <b>MI 270013758</b>		Manifest Document No. <b>01</b>		Page 1 of 1		Information in this manifest is not required by Federal law.	
3. Generator's Name and Mailing Address <b>WALDORF PAPER 177 ANGELL ST. BATTLECREEK, MI 49016</b>				4. State Manifest Document Number <b>MI 1079869</b>		5. State Generator ID			
4. Generator's Phone ( <b>616 963-5511</b> )				6. US EPA ID Number <b>0 E P 0 0 4 5 2 7 0 8</b>		7. State Transporter ID			
5. Transporter 1 Company Name <b>GENERAL ELECTRIC COMPANY</b>				8. US EPA ID Number		9. State Transporter Phone <b>16-883-1000</b>			
6. Transporter 2 Company Name				9. US EPA ID Number		10. State Facility ID			
7. Designated Facility Name and Site Address <b>GENERAL ELECTRIC COMPANY 4477 EAST 49TH STREET CLEVELAND, OHIO 44125</b>				10. US EPA ID Number <b>0 E D 0 0 4 5 2 7 0 8</b>		11. State Facility Phone <b>216-883-1000</b>			
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER).						12. Containers		13. Total Quantity	
a. <b>HAZARDOUS SUBSTANCE, LIQUID, N.O.S., ORM-E NA9188, RQ, (POLYCHLORINATED BIPHENYLS)</b>						No. <b>0 0 1</b> Type <b>C M</b>		Unit <b>0 5 0 0 0 P</b>	
b.									
c.									
d.									
14. Additional Descriptions for Materials Listed Above						15. Handling Codes for Wastes Listed Above		a. <b>1</b>	
b.								b. <b>1</b>	
c.								c. <b>1</b>	
d.								d. <b>1</b>	
15. Special Handling Instructions and Additional Information <b>DIKE AND CONTAIN SPILLS - AVOID SKIN CONTACT, GE REF# 60891</b>									
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.  (If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.)									
Printed/Typed Name <b>Stephen M. Weers</b>				Signature <i>Stephen M. Weers</i>		Date <b>6/30/88</b>			
17. Transporter 1 Acknowledgement of Receipt of Materials									
Printed/Typed Name <b>FRED. MONTONARO</b>				Signature <i>Fred Montonaro</i>		Date <b>6/30/88</b>			
18. Transporter 2 Acknowledgement of Receipt of Materials									
Printed/Typed Name				Signature		Date			
19. Discrepancy Indication Space									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.									
Printed/Typed Name				Signature		Date			



GE Industry  
Sales & Services

## Certificate of Disposal

General Electric Company certifies  
that all material received from

WALDORF PAPER

described on

Manifest Number 00901 Dated JUNE 30, 1988 was  
disposed of at the following Disposal Sites:

TRANSFORMER DISPOSED AT: ENVIROSAFE SERVICES OF IDAHO  
10 1/2 MILES, NW, GRANDVIEW, IDAHO 63624  
EPA ID NUMBER: ID0073114654  
MANIFEST DOCUMENT NUMBER: 00913

Authorized Signature  
PCB FACILITY SUPERVISOR

Title  
4477 EAST 49TH STREET

Street Address  
CLEVELAND OHIO 44125

City State Zip



## ENVIROSAFE SERVICES OF IDAHO, INC.

May 24, 1989

General Electric Company

Cleveland Apparatus Service  
4477 East 49th Street

Cleveland, OH 44125

ATTENTION: Mr. Paul Bender

SUBJECT: CERTIFICATE OF DISPOSAL

<u>MANIFEST#</u>	<u>DATE RECEIVED</u>	<u>DATE DISPOSED</u>	<u>MATERIALS</u>
00905	07-05-88	07-05-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00913	07-21-88	07-22-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00943	08-08-88	08-08-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00946	08-08-88	08-10-88 <i>posted</i>	PCB D & F Transformers
00958	08-16-88	08-16-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums
00976	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums/ Drum Solids
00977	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers

Specific material as identified by the above Manifest Document Number(s), has been received and disposed of at our landfill facility located in Grand View, Idaho in accordance with contract.

If you have any questions or need additional information feel free to contact me in the Boise office at (208) 384-1500.

Sincerely,

*Ida Larson*

Ida Larson  
Accounts Receivable

# DORSEY & WHITNEY

A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

2200 FIRST BANK PLACE EAST  
MINNEAPOLIS, MINNESOTA 55402  
(612) 340-2600

TELEX 29-0605  
FAX (612) 340-2868

MARK R. KASTER  
(612) 340-7815

January 17, 1990

340 FIRST NATIONAL BANK BUILDING  
ROCHESTER, MINNESOTA 55908  
(507) 288-3156

315 FIRST NATIONAL BANK BUILDING  
WATZATA, MINNESOTA 55391  
(612) 475-0073

1800 FIRST INTERSTATE CENTER  
BILLINGS, MONTANA 59103  
(406) 252-3800

201 DAVIDSON BUILDING  
GERAT FALLS, MONTANA 59401  
(406) 727-3638

127 EAST FRONT STREET  
MISSOULA, MONTANA 59802  
(406) 721-6025

350 PARK AVENUE  
NEW YORK, NEW YORK 10022  
(212) 415-9200

1330 CONNECTICUT AVENUE, N. W.  
WASHINGTON, D. C. 20036  
(202) 837-0700

3 GRACECHURCH STREET  
LONDON EC3V 0AT, ENGLAND  
01-929-3334

36, RUE TRONCHET  
75009 PARIS, FRANCE  
01-42-66-59-49

FAR EAST FINANCE CENTER  
HONG KONG  
852-5-8612555

Mr. Terence Bonace  
PCB Central Section 5SPT-7  
United States Environmental Protection Agency  
230 South Dearborn Street  
Chicago, Illinois 60604

Re: Waldorf Corporation  
TSCA-V-C-08-90

Dear Mr. Bonace:

The purpose of this letter is to provide documentation from Waldorf Corporation regarding the PCB inspection at its Battle Creek, Michigan facility last July, and the subsequent TSCA complaint which was filed by the EPA on December 7, 1989. Waldorf has undertaken a preliminary investigation into the allegations contained in the complaint. The investigation has revealed that Waldorf has made a substantial and concerted effort to comply with federal PCB regulations. It appears that a number of fortuitous events and miscommunications led to the present EPA complaint. The following briefly outlines my understanding of the facts.

The Michigan DNR (MDNR) apparently called Waldorf for the purpose of scheduling a PCB inspection. Waldorf consented and the inspection was set for July 27, 1989. In the normal course, Waldorf's plant engineer, Don Opala, would have coordinated the inspection. Mr. Opala, however, was unavailable on the day of inspection and Waldorf's security/safety supervisor, Randy Yates, led the inspection. Mr. Yates was not directly responsible for PCBs at the facility, although he did communicate from time-to-time with local community safety officials and he was training to understand environmental regulations pertinent to the facility.

## DORSEY & WHITNEY

Mr. Terence Bonace  
January 17, 1990  
Page Two

It is my understanding that Mr. Yates did not appreciate the scope and nature of the PCB inspection, but rather was available to lead the inspector to the various transformers at the facility.<sup>1/</sup> Mr. Yates was apparently unable to provide the inspector with documentation regarding PCBs because all of these materials were collected and maintained by the electrical department. Waldorf, however, was left with the impression that the inspection was generally acceptable to the MDNR inspector and any corrections were immediately addressed by Waldorf.

I am not aware of any written request by the MDNR for follow-up inspection of PCB documents and reports. Waldorf's files, however, reveal a letter from Mr. Yates to the MDNR inspector dated September 7, 1989, which apparently included certain PCB documentation. The letter is attached hereto. As you can see from the address on the letter, Mr. Yates was confused as to the agency (EPA rather than MDNR) which had undertaken the inspection. I do not know whether the letter was ever received by the MDNR.

The miscommunications between Waldorf and officials from the MDNR created the unfortunate situation in which Waldorf appeared to be non-responsive to the PCB inspection. The facts are that Waldorf is a responsible company that has made a substantial and continuing effort to comply with the complex federal regulatory scheme. Indeed, Waldorf has other facilities in Chicago and St. Paul which have had similar PCB inspections and which have been found to be in full compliance. I am enclosing copies of the EPA inspection compliance letters which Waldorf received in 1987 and 1989.

In connection with the seven PCB transformers at the Battle Creek facility, Waldorf has undertaken substantial efforts to comply with federal requirements. For example, Waldorf's staff electricians have inspected the PCB transformers on a regular basis. In addition, Waldorf has contracted with a transformer service company to inspect and service the transformers on an annual basis. Moreover, Waldorf has committed substantial resources and capital cost for a phased plan to remove and replace the PCB transformers at its facility.

---

<sup>1/</sup> It should be noted that Waldorf is a newly formed corporation as of July 17, 1985. Mr. Yates' tenure with the company was limited. He has since left the employment of Waldorf for other opportunities.

## DORSEY & WHITNEY

Mr. Terence Bonace  
January 17, 1990  
Page Three

The above information is reflective of Waldorf's commitment to comply with federal PCB regulations. The failed attempts to communicate these efforts with the MDNR obviously resulted in the issuance of the TSCA complaint. While we can certainly discuss how the mechanics of the inspection process may have failed, I think the better approach is to find a common ground to address the issues cited in the complaint. In this regard, I am providing a set of documents and records which reflect Waldorf's compliance activities. I am also providing a set of photographs which depict Waldorf's transformer stations. The following materials are enclosed:

1. The letter from Randy Yates to Patricia Spitzley dated September 7, 1989;
2. Two letters from EPA Region V to Waldorf regarding no PCB violations at Waldorf's St. Paul and Chicago facilities dated March 4, 1987 and June 23, 1989, respectively;
3. Periodic visual PCB transformer inspection reports for the period July 1985 through December 1989;
4. Annual reports prepared by transformer consultants dated April 13, 1987 and March 15, 1988;
5. Annual report prepared by GE dated August 28, 1989;
6. Letters to the City of Battle Creek Fire Department disclosing the presence and location of PCB transformers dated February 26, 1988 and February 28, 1989. Waldorf has had verbal conversation with the local Fire Chief Owen prior to this time;
7. The documentation related to the disposal of one PCB transformer by GE dated May 19, 1988; and
8. Photographs of the PCB transformer locations at Waldorf.

DORSEY & WHITNEY

Mr. Terence Bonace  
January 17, 1990  
Page Four

I think the enclosed documents are fairly complete and represent Waldorf's efforts to comply with TSCA and the EPA regulations. In fact, it is my understanding that the MDNR inspector suggested that Waldorf replace the wire cage which surrounded transformer substation #2 with a masonry wall to provide further containment. Waldorf completed this work in November of last year. (See photographs). It undisputedly is EPA's policy to encourage this type of conscientious effort to properly handle PCBs.

The above information certainly does not present a fact situation which identifies a company trying to avoid compliance with the federal PCB requirements. Nor do the facts justify or compel the magnitude of penalties suggested in the TSCA complaint. Under the circumstances, the penalties sought by EPA are completely unmerited and do not comport with the nature, circumstance, limited extent and lack of gravity of the alleged violations. I would request that the agency consider Waldorf's excellent compliance history, the lack of prior violations, the limited potential for any harm or injury, the lack of culpability and Waldorf's stated efforts to remove PCB transformers from its facility in accordance with laws and regulations. These factors should mitigate the need for any penalty in this matter.

This letter is provided in an effort to settle and compromise the TSCA complaint as contemplated in § 22.18 of the Agency's Consolidated Rules of Practice and Rule 408 of the Federal Rules of Evidence. I hope the agency will see the merit of the arguments addressed herein and be prepared to reasonably discuss the situation during the informal settlement conference scheduled for 10:00 a.m. on January 19th, 1990. I look forward to working with you further.

Very truly yours,



Mark R. Kaster

Enclosures

cc: Jennifer Costanza, Esq.  
Mr. Les Spurgeon  
Mr. Don Opala

bcc: Mr. Jack Greenshields /  
Mr. Gary Kaziukewicz ✓  
William R. Hibbs, Esq.



Industry Services Engineering  
General Electric Company  
676 Front Street, NW, Grand Rapids, MI 49504  
616 963-5564

May 19, 1988

Quotation No. 389E00165

Waldorf Corporation  
177 Angell Street  
Battle Creek, Michigan 49016

Attention: Mr. Steve Weers

Reference: PCB Transformer Disposal

Gentlemen:

In response to your request, the General Electric Company, Industrial Sales and Services Division, Grand Rapids Office, is pleased to submit our proposal to provide services at your Battle Creek facility as follows:

A. Remove and dispose of one (1) 200 KVA PCB transformer.

ISSD will provide technical supervision, craft labor, tools, and equipment required to complete the removal work.

A qualified field engineer will supervise technical and contractor personnel for the overall project.

A PCB certified supervisor will direct the actual PCB material handling and disposal.

WORKSCOPE:

Remove and dispose of the following transformer:

A. 200 KVA - S/N 8037220.

Work on the transformer will include the following:

1. Disconnect HV and LV connections as necessary.
2. Remove the transformer.
3. Decommission and dispose of PCB liquid and transformer carcass.
4. Dispose of any other waste we generate while on-site pertaining to this portion of the work.
5. Provide disposal certificates and signed manifests to show proper disposal after completion of the job.

#### CUSTOMER RESPONSIBILITIES:

1. The customer shall provide free and safe access to the job site in order to perform this work.
2. All scheduling and switching shall be the responsibility of the customer. The transformer must be out of service to perform this work.
3. It shall be the customer's responsibility to provide an uninterrupted flow of work and/or access to the equipment. If delays are incurred, their associated costs will be billed as extras.
4. The customer must provide reasonable, mutually agreeable access to each equipment and work area. This includes removal and restoration of any and all obstructions in order to provide a clear path for rigging out the transformer between the present location and the closest convenient place to locate a truck.
5. Provide the required EPA I.D. number and PCB item out of service date.

#### PRICE, PAYMENT AND ESCALATION:

For the afore-mentioned scope of services we are pleased to quote you  
.....\$ 9,972.00 Lot Net.

Our terms of payment are net due upon receipt of invoice.

Title shall pass on a pro-rata basis as work is completed.

The prices quoted herein are firm for a period of thirty (30) days after which they shall be subject to adjustment.

The price quoted in this proposal is contingent upon all work being performed on a straight time basis, and all work being completed by the end of 1988.

BASIS OF PROPOSAL:

1. The terms and conditions of the attached GEISS Form 487 (CS), and the attached PCB clauses, GEISS Form 487 (PCB), shall apply unless specifically stated otherwise in this proposal.
2. These units are presently owned by Waldorf Corporation and title cannot be transferred to a "middle agent" or "distributor", etc. for resale to another ultimate user.
3. Title to the toxic waste will transfer on a per event basis at the beginning of on-site work on each particular piece of equipment .

This document contains proprietary information and is submitted upon the expressed condition that the information contained herein will not be used directly or indirectly in any way detrimental to the interest of the General Electric Company.

We thank you for allowing us to be of service, and hope to be favored with your order. I am sure you will find our PCB terms to be the best available in the industry. Should any further questions arise, please do not hesitate to contact me at this office.

Sincerely;



Warren J Thaler  
Area Engineer  
ISSD - Industrial.



## ENVIROSAFE SERVICES OF IDAHO, INC.

May 24, 1989

General Electric Company

Cleveland Apparatus Service  
4477 East 49th Street

Cleveland, OH 44125

ATTENTION: Mr. Paul Bender

SUBJECT: CERTIFICATE OF DISPOSAL

<u>MANIFEST#</u>	<u>DATE RECEIVED</u>	<u>DATE DISPOSED</u>	<u>MATERIALS</u>
00905	07-05-88	07-05-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00913	07-21-88	07-22-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00943	08-08-88	08-08-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00946	08-08-88	08-10-88 <i>posted</i>	PCB D & F Transformers
00958	08-16-88	08-16-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums
00976	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums/ Drum Solids
00977	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers

Specific material as identified by the above Manifest Document Number(s), has been received and disposed of at our landfill facility located in Grand View, Idaho in accordance with contract.

If you have any questions or need additional information feel free to contact me in the Boise office at (208) 384-1500.

Sincerely,

Ida Larson  
Accounts Receivable



GE Industry  
Sales & Services

## Certificate of Disposal

General Electric Company certifies  
that all material received from

WALDORF PAPER

described on

00901

JUNE 30, 1988

Manifest Number \_\_\_\_\_ Dated \_\_\_\_\_ was  
disposed of at the following Disposal Sites:

TRANSFORMER DISPOSED AT: ENVIROSAFE SERVICES OF IDAHO  
10 1/2 MILES, NW, GRANDVIEW, IDAHO 63624  
EPA ID NUMBER: ID0073114654  
MANIFEST DOCUMENT NUMBER: 00913

Authorized Signature  
PCB FACILITY SUPERVISOR

Title  
4477 EAST 49TH STREET

Street Address  
CLEVELAND OHIO 44125

City State Zip

DNR

MICHIGAN DEPARTMENT  
OF NATURAL RESOURCESDO NOT WRITE IN THIS SPACE  
ATT. ☐ DIS. ☐ REJ. ☐ PR ☐1979, as amended and Act 136, P.A.  
1969.Failure to file is punishable under  
section 299.548 MCL or Section 10 of  
Act 136, P.A. 1969.

Please print or type.

Form Approved OMB No. 2050-0039 Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST		Generator's US EPA ID No.	Manifest Document No.	Page 1 of 1	Information in the spaces above is not required by Federal law.
1. Generator's Name and Mailing Address		WALDORF PAPER 177 ANGELL ST. BATTLECREEK, MI 49016		2. State Manifest Document Number MI 10749353	
3. Generator's Phone ( ) 616 963-5511		4. State Generator's ID		5. State Transporter's ID	
6. Transporter 1 Company Name GENERAL ELECTRIC COMPANY		7. US EPA ID Number 0 H D 0 0 4 5 2 7 0 0 8		8. Transporter's Phone ( ) 216 883-1000	
9. Transporter 2 Company Name		10. US EPA ID Number		11. State Transporter's ID	
12. Designated Facility Name and Site Address GENERAL ELECTRIC COMPANY 4477 EAST 49TH STREET CLEVELAND, OHIO 44125		13. US EPA ID Number 0 H D 0 0 4 5 2 7 0 0 8		14. State Facility's ID	
15. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER)		16. Containers		17. Total Quantity	
a. HAZARDOUS SUBSTANCE, LIQUID, N.O.S., ORM-E NA9188, RQ, (POLYCHLORINATED BIPHENYLS)		No. Type		Unit	
b.		0 0 1 C M		0 5 0 0 0 P	
c.					
d.					
18. Additional Descriptions for Materials Listed Above		19. Handling Codes for Wastes Listed Above		a. <input type="checkbox"/> b. <input type="checkbox"/> c. <input type="checkbox"/> d. <input type="checkbox"/>	
TRANSFORMER WITH LIQUID (GULF)					
20. Special Handling Instructions and Additional Information DIKE AND CONTAIN SPILLS, AVOID SKIN CONTACT, GE REF# 60891					
21. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.					
22. Printed/Typed Name Stephen M. Weers		23. Signature Stephen M. Weers		24. Date 12/30/88	
25. Transporter 1 Acknowledgement or Receipt of Materials		26. Signature Fred Montonero		27. Date 12/30/88	
28. Transporter 2 Acknowledgement or Receipt of Materials		29. Signature		30. Date	
31. Printed/Typed Name		32. Signature		33. Date	
34. Discrepancy Indication Space					
35. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.					
36. Printed/Typed Name		37. Signature		38. Date	



## GE Industry Sales & Services

### Supplemental Conditions for PCB Services

For PCB Services, the conditions contained herein shall supplement the CONDITIONS OF SALE, GEISS Form 487(CS):

#### 1. DEFINITIONS

a. "PCB Service" shall mean the service described in the attached quotation or contract to the extent that such services involve PCB Material. PCB Service may include removal, disposal, repair, testing, clean-up, replacement of insulating fluids and all other activities (such as transportation, storage, etc.) incident thereto.

b. "PCB Material" shall mean the equipment or other material containing or contaminated with polychlorinated biphenyl (PCB) identified in the attached quotation or contract as well as all the parts and the contents thereof and all material used in the performance of the PCB Service which comes into contact with PCB Material.

c. "Release" shall mean with respect to the PCB Material the intentional or unintentional spilling, migration or escape of the PCB Material or any part thereof either alone or in connection with any other substance, including, but not limited to, water, air and smoke.

#### 2. PCB MATERIAL TERMS

a. GE represents that it has knowledge of the requirements associated with the use, collection, handling, storage, transportation and disposal of the PCB Material; that it has experience in such use, collection, handling, storage, transportation and disposal; and that it shall have instructed its personnel, subcontractors and agents in the proper procedures to be used in the performance of PCB Service.

b. GE will perform the PCB Service in compliance with any and all federal, state and local laws and regulations pertaining thereto, including but not limited to, the regulations contained in 40 CFR Part 761; and will have obtained all licenses and permits required by law to engage in the activities necessary to perform the PCB Service.

c. GE warrants that storage, transportation and disposal of the PCB Material will be done by means of facilities and vehicles which are fully licensed by appropriate federal, state and local authorities, as required.

d. The Customer warrants that it has full legal title to, or the power and right to transfer title to, the PCB Material (including, without limitation, all licenses or permits required by law or regulation to be obtained by the owner and/or generator of the material), and that the Customer has no knowledge that the PCB Material is not as otherwise described in the contract documents.

e. If the Customer provides containers for transportation and/or storage of the PCB Materials, such containers shall comply with all applicable law. GE's sole remedy for the Customer's default under this paragraph is, that upon discovery of one or more non-complying containers, GE may provide complying containers and charge the Customer for the containers, the labor needed to transfer the PCB Material into complying containers, and any additional disposal charges.

f. To the extent that any PCB Material is to be disposed of, GE will take title to such PCB Material when it is loaded on a transport vehicle provided by GE or when the PCB Material is delivered to a GE facility, whichever is earlier. If GE and Customer have agreed in writing that title will pass at an earlier time, such agreement will govern. GE takes title to the PCB Material only for the purpose of disposal and shall not

use or transfer title to the PCB Material for any other purpose. In the event that the PCB Material is later determined to be of a nature or character different from that described in the contract documents, title shall pass back to the Customer and, unless otherwise agreed, GE may return the PCB material to the Customer at the Customer's expense and the Customer shall be liable for and shall indemnify GE against all losses, damages and claims caused by the PCB material including any damage to the environment, except to the extent that such losses, damages or claims are the result of the negligent or other illegal act or omission of GE or its subcontractors.

g. Unless the Customer has otherwise advised GE in writing before commencement of the PCB Service, the Customer represents that any of the PCB material which is to be disposed of has not been in storage for disposal or out of service prior to the start of work. The Customer shall indemnify GE against all loss, cost and liability, including fines, penalties, attorneys' fees and costs of defense and extra costs of disposal, on account of any failure of GE to cause the disposal of any PCB material prior to one year after the PCB Material first went into storage for disposal because of reliance on the representation described in the preceding sentence or on any false or mistaken representation by the Customer concerning the date when the PCB material first went into storage for disposal.

h. Unless otherwise agreed or required by law, GE will not test the PCB Material to determine the level of PCB concentration without the prior consent of the Customer. Unless there is a determination of PCB concentration made or accepted by GE:

- (1) GE may charge the disposal price for PCB Material of the highest concentration;
- (2) GE may use special procedures to prevent contamination of its facilities and equipment and make an appropriate extra charge for such service; and
- (3) GE shall not be liable to the Customer for any level of PCB concentration revealed by a subsequent test.

i. The following rules apply in the case of any replacement of insulating fluid for the purpose of reclassifying any equipment under 40CFR 761.30(a)(2)(iv), (b)(2)(vii) or (h)(2)(iv):

- (1) Unless otherwise agreed, the Customer shall be responsible for operating the equipment as required by regulation or otherwise during a 90-day in-service period.
- (2) GE will test to determine the level of PCB concentration prior to fluid replacement and will make a compliance retest after the 90-day in-service period.
- (3) GE guarantees that the PCB concentration shown by a compliance retest will not exceed the concentration level stated in the contract documents, or, if no level is stated, then, that the PCB concentration will be such that the equipment will be reclassified to the next lower class. The Customer's sole remedy for a breach of this guarantee is that GE will reperform the service to achieve the results guaranteed. GE shall not be responsible for any increase in PCB concentration shown by testing after a successful compliance retest.

j. Subject to the provisions of paragraph 2.k. below, in the event of the failure by GE, its employees, agents and subcontractors to comply with any applicable federal, state or municipal law, regulation or rule which directly or indirectly regulates or affects the use, collection, handling, storage, transportation or disposal of the PCB Material; or the release of all or any part of the PCB material prior to the completion of the



# GE Industry Sales & Services

## Conditions of Sale for Services

The sale of any service and incidental goods ordered by the Customer is expressly conditioned upon the terms and conditions contained or referred to herein. Any additional or different terms and conditions set forth in the Customer's purchase order or similar communication are objected to and will not be binding upon GE Industry Sales & Services (herein called GE) unless specifically assented to in writing by GE's authorized representative. Authorization by the Customer, whether written or oral, to furnish services and incidental goods will constitute acceptance of these terms and conditions.

### 1. SERVICE DEFINITIONS

a. **COMPLETE INSTALLATION/MAINTENANCE/CONSTRUCTION** is any combination of planning, management, labor, tools and incidental goods to move, install, assemble, modify, repair, modernize, start-up and/or maintain equipment.

b. **FIELD ENGINEERING** is engineering and technical guidance, advice and counsel based upon GE's current engineering, manufacturing, installation and operating practices, as related to work performed by others.

c. **JOB MANAGEMENT** is any combination of planning, scheduling, monitoring, selection of crews, as specified in the contract documents, but does not include responsibility for supervision of labor or for the quality or acts of craft labor.

d. **TRAINING** is an instructional course prepared and provided by personnel proficient in the subject matter.

e. **ENGINEERING STUDY/INSPECTION/TEST** is system design and analysis of equipment or systems by competent, experienced personnel using special techniques, instruments or devices with the objective of reporting opinions or recommendations relating to the current condition and future serviceability of the equipment or system.

f. **PCB SERVICE** is any combination of relocation, testing, containment, retrofit/refill or retrofit/replacement of PCB material.

### 2. WARRANTY

a. GE warrants to the Customer that goods and services sold will be free from defects in material and workmanship and will conform to any mutually agreed upon specifications. If any failure to meet this warranty appears within one year from the date of shipment of the goods or completion of the services, on the condition that GE be promptly notified in writing thereof, GE will correct any such failure by reperforming any defective portion of the services furnished and supplying conforming goods. If the contract covers complete installation, maintenance or construction, GE will correct the failure by reperforming any defective service, and either repairing or replacing (at its option) any defective goods furnished and any damage to the equipment upon which the service was performed resulting from defective service. If reperformance is not practicable, GE will furnish without charge services in an amount essentially equal to those which, in GE's sole judgement, would have been required for reperformance. If the contract covers job management, GE's sole obligation will be to replace the job manager for the balance of the job. If the contract covers training, GE's sole obligation will be to replace the assigned instructor and reperform the training.

b. The preceding paragraph a. sets forth the exclusive remedy for all claims based on failure of, or defect in, goods or services sold hereunder, whether the failure or defect arises before or during the warranty period, and whether a claim, however instituted, is based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise. The foregoing warranty is exclusive and is in lieu of all other warranties whether written, oral, implied or statutory. **AS TO ALL GOODS SOLD, NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PARTICULAR PURPOSE SHALL APPLY.**

### 3. PATENTS

a. GE warrants that the goods sold hereunder, and any part thereof, shall be delivered free of any rightful claim of any third party for infringement of any United States patent. If notified promptly in writing and given authority, information and assistance, GE shall defend, or may settle, at its expense, any suit or proceeding against the Customer based on a claimed infringement which would result in a breach of this warranty, and GE shall pay all damages and costs awarded therein against the Customer due to such breach. In case any goods are in such suit held to constitute such an infringement and the use for the purpose intended of said goods is enjoined, GE shall, at its expense and option, either procure for the Customer the right to continue using said goods, or replace same with noninfringing goods, or modify same so they become noninfringing, or remove the goods and refund the purchase price (less reasonable depreciation for any period of use) and any transportation costs separately paid by the Customer. The foregoing states the entire liability of GE for patent infringement.

b. The preceding paragraph a. shall not apply to any goods specified by the Customer and not of GE manufacture, or manufactured to the Customer's design, or to the use of any goods furnished hereunder in conjunction with any other goods in a combination not furnished by GE as a part of the transaction. As to any such goods, or use in such combination, GE assumes no liability whatsoever for patent infringement and the Customer will hold GE harmless against any infringement claim arising therefrom.

### 4. EXCUSABLE DELAYS

a. GE shall not be liable for delay due to: (1) causes beyond its reasonable control, or (2) acts of God, acts of the Customer, prerequisite work by others, acts of civil or military authority, government priorities, fires, strikes or other labor disturbances, floods, epidemics, war, riot, delays in transportation or car shortages, or (3) inability to obtain or delay in obtaining, due to causes beyond its reasonable control, suitable labor, materials, or facilities. In the event of any such delay, the time of performance shall be extended for a period equal to the time lost by reason of the delay.

b. In the event GE is delayed by acts of the Customer or by prerequisite work by other contractors or suppliers of the Customer, GE shall be entitled to an equitable price adjustment in addition to extension of the time of performance.

### 5. SALES AND SIMILAR TAXES

In addition to the price specified herein, the Customer shall pay, or reimburse GE for, the gross amount of any present or future sales use, excise, value-added or other similar tax applicable to the price, sale or furnishing of any services or goods hereunder, or to their use by GE or the Customer, or the Customer shall provide GE with evidence of exemption acceptable to the taxing authorities.

### 6. PAYMENTS AND FINANCIAL CONDITION

a. Pro rata payments shall become due as shipments are made or as work is completed. If GE consents to delayed shipments of goods, payment shall become due on the date when GE is prepared to make shipment. All payments shall be made without set-off for claims arising out of other sales by GE.

b. If the financial condition of the Customer at any time does not, in the judgment of GE, justify continued performance on the terms of payment previously agreed upon, GE may require full or partial payment in advance or shall be entitled to terminate the contract and receive

(Continued on reverse)

## DORSEY & WHITNEY

A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

2200 FIRST BANK PLACE EAST  
MINNEAPOLIS, MINNESOTA 55402  
(612) 340-2600  
TELEX 29-0605  
FAX (612) 340-2868

MARK R. KASTER  
(612) 340-7815

340 FIRST NATIONAL BANK BUILDING  
ROCHESTER, MINNESOTA 55908  
(507) 288-3156

315 FIRST NATIONAL BANK BUILDING  
WAYZATA, MINNESOTA 55391  
(612) 475-0373

1800 FIRST INTERSTATE CENTER  
BILLINGS, MONTANA 59103  
(406) 252-3800

801 DAVIDSON BUILDING  
GREAT FALLS, MONTANA 59401  
(406) 727-3632

127 EAST FRONT STREET  
MISSOULA, MONTANA 59802  
(406) 721-6023

350 PARK AVENUE  
NEW YORK, NEW YORK 10022  
(212) 415-9800  
1330 CONNECTICUT AVENUE, N. W.  
WASHINGTON, D. C. 20036  
(202) 857-0700  
3 GRACECHURCH STREET  
LONDON EC3V 0AT, ENGLAND  
01-929-3334  
36, RUE TRONCHET  
75009 PARIS, FRANCE  
01-42-66-59-49  
FAR EAST FINANCE CENTER  
HONG KONG  
852-5-8612555

December 29, 1989

Regional Hearing Clerk (5MFA-14)  
United States Environmental Protection Agency  
Region V  
230 South Dearborn Street  
Chicago, Illinois 60604

Re: Docket No. TSCA-V-C-08-90

Dear Hearing Clerk:

Enclosed and served upon you by United States mail  
please find Respondent's Answer and Request for Hearing.

Very truly yours,



Mark R. Kaster

MRK:tjv  
Enclosure

cc: Counsel of Record  
Mr. Jack Greenshields  
Mr. Les Spurgeon

# DORSEY & WHITNEY

A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

350 PARK AVENUE  
NEW YORK, NEW YORK 10022  
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1330 CONNECTICUT AVENUE, N. W.  
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(507) 288-0156

315 FIRST NATIONAL BANK BUILDING  
WATZATA, MINNESOTA 55391  
(612) 475-0373

1200 FIRST INTERSTATE CENTER  
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(406) 252-3800

201 DAVIDSON BUILDING  
GREAT FALLS, MONTANA 59401  
(406) 737-3632

127 EAST FRONT STREET  
MISSOULA, MONTANA 59802  
(406) 731-6025

December 29, 1989

Terence Bonace  
PCB Central Section (5SPT-7)  
United States Environmental Protection Agency  
Region I  
230 South Dearborn Street  
Chicago, Illinois 60604

Re: Waldorf Corporation  
TSCA Docket No. TSCA-V-C-08-90  
PCB Compliance

Dear Mr. Bonace:

I represent Waldorf Corporation in the above-referenced PCB matter. Waldorf respectfully requests an informal conference to explore the possibility of settlement as provided for under the Agency's rules of practice, 40 C.F.R. § 22.18(a).

Very truly yours,



Mark R. Kaster

MRK:tjv

cc: Jennifer Costanza, Esq.  
Mr. Jack Greenshields  
Mr. Les Spurgeon

BEFORE THE  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION V

In Re:

Docket No. TSCA-V-C-08-90

Waldorf Corporation  
Battle Creek, Michigan,

RESPONDENT'S ANSWER  
AND REQUEST FOR HEARING

Respondent.

I.

ANSWER

Respondent Waldorf Corporation, for its Answer and Request for Hearing, states as follows:

1. Respondent does not admit or deny the allegations in Paragraph 1 of the Complaint, but states that the statutes and/or regulations cited speak for themselves.

2. Respondent is without sufficient knowledge or information with respect to the allegations in Paragraph 2 of the Complaint, and therefore denies the same.

3. Respondent admits, under Paragraph 3 of the Complaint, that it is a corporation incorporated under the laws of the State of Delaware with a place of business at 177 Angell Street, Battle Creek, Michigan. Respondent lacks sufficient knowledge and information to form a belief about whether it was a corporation at all times relevant to the Complaint and therefore denies the same.

4. Respondent does not admit or deny the allegations in Paragraph 4 of the Complaint, but states that the statutes and/or regulations cited speak for themselves.

5. Respondent admits that it is a "person," as defined in Paragraph 5 of the Complaint. The allegation in Paragraph 5 that respondent is subject to the prohibitions set forth in 40 C.F.R. Part 761 calls for a legal conclusion and Respondent therefore denies the same.

6. Respondent admits the allegations in Paragraph 6 of the Complaint.

7. Respondent states with respect to the allegation in Paragraph 7 of the Complaint that Patricia Spitzley inspected Respondent's facility. Respondent, however, lacks sufficient knowledge or information to form a belief about the purpose of the inspection or whether Ms. Spitzley was a representative of the U.S. EPA. Respondent therefore denies the same.

8. Respondent admits the allegation in Paragraph 8 of the Complaint.

9. Respondent admits the allegation in Paragraph 9 of the Complaint.

10. Respondent does not admit or deny the allegations in Paragraph 11 of the Complaint, but states that the statutes and/or regulations cited speak for themselves.

11. Respondent denies the allegations in Paragraph 12 of the Complaint. Respondent affirmatively asserts that it has maintained records regarding the disposition of PCBs and PCB items.

12. Respondent does not admit or deny the allegations in Paragraph 14 of the Complaint, but states that the statutes and/or regulations cited speak for themselves.

13. Respondent denies the allegation in Paragraph 15 of the Complaint. Respondent affirmatively asserts that it has on several occasions informed the local fire department about the PCB transformers at its facility. The fire department is aware of the address of the facility, the location of transformers within the building, the principal constituent of the transformers and the name and phone number of the person to contact at the facility.

14. Respondent does not admit or deny the allegations in Paragraph 16 of the Complaint, but states that the statutes and/or regulations cited speak for themselves.

15. Respondent denies the allegation in Paragraph 17 of the Complaint and affirmatively states that it is unaware of any combustible material stored within five meters of its seven PCB transformers.

16. Respondent denies the allegations in Paragraph 18 of the Complaint.

17. Respondent does not admit or deny the allegations in Paragraph 20 of the Complaint, but states that the statutes and/or regulations cited speak for themselves.

18. Respondent denies the allegations in Paragraph 21 of the Complaint. Respondent affirmatively states that the means

of access and the PCB transformers were properly marked to warn firefighters as provided in 40 C.F.R. § 761.40(j).

## II.

### AFFIRMATIVE DEFENSES

19. Respondent's electricians have inspected the PCB transformers at the facility on a regular basis.

20. Respondent has proper records and manifests regarding disposition of PCB transformers. Respondent has undertaken good faith efforts to comply with PCB regulations at all of its facilities, as demonstrated by prior EPA inspections.

21. Respondent has an excellent history of compliance and responsiveness regarding environmental laws and regulations.

22. Respondent has identified (and reported to the city of Battle Creek Fire Department) the PCB transformers at its facility under the SARA Title III Community Right-to-Know provisions.

## III.

### PROPOSED CIVIL PENALTY

23. Respondent asserts that in determining the amount of a civil penalty, the administrator has not taken into account the nature, circumstance, limited extent and lack of gravity of the alleged violation and, with respect to Respondent, has not taken into account Respondent's excellent compliance history, lack of prior violations, culpability and other matters as justice requires, in accordance with 15 U.S.C. § 2615(2)(C).

IV.

RESPONDENT'S REQUEST FOR HEARING

24. Pursuant to 15 U.S.C. § 2616(a) and 5 U.S.C. § 552 et seq., Respondent herein requests a hearing to contest the facts contained in the Complaint and to contest the appropriateness of a penalty.

V.

RESPONDENT'S REQUEST FOR A SETTLEMENT CONFERENCE

25. Pursuant to 40 C.F.R. § 22.18, Respondent herein requests an informal settlement conference.

FOR THE REASONS HEREIN STATED, Respondent requests that:

1. The Complaint be dismissed, and
2. No civil penalty be imposed; or
3. If any civil penalty is imposed, the proposed penalty be substantially reduced based on (a) Respondent's lack of culpability; (b) no history of violations, and (c) Respondent's good faith efforts to comply to EPA requirements.

Dated: December 29, 1989.

DORSEY & WHITNEY

By Mark R. Kaster  
Mark R. Kaster  
Atty. Reg. No. 159517  
2200 First Bank Place East  
Minneapolis, MN 55402  
Telephone: (612) 340-7815

Attorneys for Respondent  
Waldorf Corporation



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

September 7, 1989

Patricia Spitzley  
United States Environmental Protection Agency  
Box 30028  
Lansing, MI 48909

Mrs. Spitzley:

This letter and enclosed documents are in response to your inspection of the Waldorf Corporations transformers on 27 July 1989. If you require any further information about this subject you can contact me at the address that appears at the end of this letter.

Yours truly,

Randy B. Yates  
Supervisor Safety/Security  
Waldorf Corporation  
177 Angell  
Battle Creek, MI 49016  
(616) 963-5511 ext. 346

REY/sf

Enclosures

MAR 0 4 1987



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION 5**

**230 SOUTH DEARBORN ST.**

**CHICAGO, ILLINOIS 60604**

REPLY TO THE ATTENTION OF:

**5S-P&TSB-7**

**MAR 04 1987**

Mr. Dean Wetzel  
Senior Vice President  
Waldorf Corporation  
2250 Wabash  
St. Paul, Minnesota 55164

Re: PCB Compliance Inspection

Dear Mr. Wetzel:

On October 31, 1985, representatives of the United States Environmental Protection Agency (U.S. EPA) conducted a PCB compliance inspection of Waldorf Corporation, 2250 Wabash, St. Paul, Minnesota.

Based upon the data collected during that inspection, the U.S. EPA has determined that no violations of the Federal PCB regulations, 40 CFR Part 761, were evident at the time of inspection.

A copy of the inspection report is enclosed for your information. If you have any questions, please do not hesitate to contact Maria T. White, at (312) 886-6845.

Sincerely,

John Connell, Chief  
PCB Control Section

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5  
230 SOUTH DEARBORN ST.  
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF.

JUN 23 1989

55PT-7

WILSON CORP  
4200 S PALMER  
CHICAGO IL 60632-  
02/21/89

Re: PCB Compliance Inspection

Dear Sir:

Representatives of the United States Environmental Protection Agency (U.S. EPA) conducted a PCB compliance inspection at the above facility on the above date.

Based upon the data collected during that inspection, the U.S. EPA has determined that no violations of the Federal PCB regulations, 40 C.F.R., Part 761, were evident at the time of the inspection.

If you have any questions, please do not hesitate to call this office at (312) 886-6906.

Sincerely,

*John Connell*  
John Connell, Chief  
PCB Control Section

# Monitoring Loas

July 85 - Dec. 89

DATE \_\_\_\_\_

7-28-85

**PLANT**

F A

OF

<u>- LOCATION</u>	<u>DESCR.</u>	<u>ADDITIONS (GAL)</u>	<u>CONTENTS (GAL)</u>	<u>LEAKS</u>	<u>SPIILLS</u>	<u>INSP. BY</u>
SUBSTATION #2	USED OIL		20-30	NO	NO	

**OF**

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER
TRANSFORMER INSPECTION-MONTHLY					61	
SUBJECT						CALCULATION
ANGEL ST. MILL						
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	Deft 61
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	"	"
	8113530	1000	434	NO	"	"
	8037218	300	209	NO	"	"
	8113527	1000	434	NO	"	"
BEATER ROOM DISCONNECTS	—	—	50-100	NO	"	"
SUBSTATION #3 (TINE BASEMENT)	8113529	750	380	NO	"	"
	8037219	200	115	NO	"	"

MISCELLANEOUS MATERIAL

[illegible]

## ENGINEERING CALCULATIONS

DATE 11-6-85 PLANT \_\_\_\_\_ OF \_\_\_\_\_

DEPARTMENT

**JOB ORDE**

# TRANSFORMER INSPECTION-MONTHLY

61.

**SUBJECT**

ANGEL ST. MILL

### CALCULATIONS

54.

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	6/
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	"	"	6/
	8113530	1000	434	"	"	6/
	8037218	300	209	"	"	6/
	8113527	1000	434	"	"	6/
BEATER ROOM DISCONNECTS	—	—	50-100	"	"	6/
SUBSTATION #3 (TINE BASEMENT)	8113529	750	380	"	"	6/
	8037219	200	115	"	"	6/

MISCELLANEOUS MATERIAL

[illegible]

## ENGINEERING CALCULATIONS

DATE 10-3-85 PLANT A OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER
TRANSFORMER INSPECTION - MONTHLY					61	
SUBJECT						CALCULATION
ANGEL ST. MILL						
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y.
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	R.M.H.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	R.M.H.
	8113530	1000	434	NO	NO	"
	8037218	300	209	NO	NO	"
	8113527	1000	434	NO	NO	"
BEATER ROOM DISCONNECTS	—	—	50-100	NO	NO	"
SUBSTATION #3 (TINE BASEMENT)	8113529	750	380	NO	NO	"
	8037219	200	115	NO	NO	"

MISCELLANEOUS MATERIAL

[illegible]



[illegible]

## ENGINEERING CALCULATIONS

DATE \_\_\_\_\_

PLANT

OF

### DESCRIPTION OF JOB

DEPARTMENT

**JOB ORDER**

# TRANSFORMER INSPECTION-MONTHLY

61

**SUBJECT**

ANGEL ST. MILL

**CALCULATIC**

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y
SUB STATION #1 (POWER HOUSE)	8113528	750	380			11/24
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240			11/24
	8113530	1000	434			11/24
	8037218	300	209			11/24
	8113527	1000	434			11/24
BEATER ROOM DISCONNECTS	—	—	50-100			11/24
STATION #3 (PILING BASEMENT)	8113529	750	380			11/24
	8037219	200	115			11/24

MISCELLANEOUS MATERIAL

[illegible]

## ENGINEERING CALCULATIONS

DATE 4-17-86 PLANT 1 OF 1

**DESCRIPTION OF JOB**

DEPARTMENT

**JOB ORDER**

## TRANSFORMER INSPECTION-MONTHLY

61

**SUBJECT**

ANGEL ST. MILL

CALCULATI

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y.	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	2/11/11	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240				
	8113530	1000	434				
	8037218	300	209				
	8113527	1000	434				
BEATER ROOM DISCONNECTS	—	—	50-100				
SUBSTATION #3 (PUMP BASEMENT)	8113529	750	380				
	8037219	200	115				

MISCELLANEOUS MATERIAL

[illegible]

## ENGINEERING CALCULATIONS

DATE \_\_\_\_\_

7-86

**PLANT**

OF

**DESCRIPTION OF JOB**

# TRANSFORMER INSPECTION-MONTHLY

DEPARTMENT

61

**JOB ORD**

**SUBJECT**

ANGEL ST. MILL

**CALCULAT**

[illegible]



DATE Nov - 86 PLANT OF

[illegible]

DATE JANUARY - 87 PLANT

OF

[illegible]

## ENGINEERING CALCULATIONS

DATE \_\_\_\_\_

Feb - 87

**PLANT**

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER NO.	
SUBJECT						CALCULATIONS	
TRANSFORMER INSPECTION - MONTHLY					61		
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.U.	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No		
	8113530	1000	434	No	No		
	8037218	300	209	No	No		
	8113527	1000	434	No	No		
FEEDER ROOM DISCONNECTS	—	—	50-100	No	No		
SUBSTATION #3 (BASEMENT)	8113529	750	380	No	No		
	8037219	200	115	No	No		

MISCELLANEOUS MATERIAL

[illegible]

## ENGINEERING CALCULATIONS

DATE MARCH-87 . PLANT . OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER NO.
TRANSFORMER INSPECTION-MONTHLY	61	
SUBJECT		CALCULATIONS
ANGEL ST. MILL		

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B'Y	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.W.	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No		
	8113530	1000	434	No	No		
	8037218	300	209	No	No		
	8113527	1000	434	No	No		
BEATER ROOM DISCONNECTS	—	—	50-100	No	No		
SUBSTATION #3 (2nd FLOOR BASEMENT)	8113529	750	380	No	No		
	8037219	200	115	No	No		

MISCELLANEOUS MATERIAL

[illegible]

DATE April - 87 PLANT \_\_\_\_\_ OF \_\_\_\_\_  
DEPARTMENT \_\_\_\_\_ JOB OR \_\_\_\_\_

**DESCRIPTION OF JOB**

DEPARTMENT

**JOB ORDER No.**

# TRANSFORMER INSPECTION-MONTHLY

6.

**SUBJECT**

## CALCULATIONS

ANGEL ST. MILL

TEETER ROOM  
DISCONNECTS

MISCELLANEOUS MATERIAL

SUBSTATION #2



**FORM 211**

## ENGINEERING CALCULATIONS

DATE \_\_\_\_\_

Sept. 87

**PLANT**

**OF**

# STR REGIS

[illegible]

**SHEET N**

DATE Dec. 87 PLANT OF

**JOB ORD:**

61

**CALCULATE**

ANGEL ST. MILL

MISCELLANEOUS MATERIAL

[illegible]

DATE **2-88**

PLANT

OF

DESCRIPTION OF JOB

**TRANSFORMER INSPECTION - MONTHLY**

DEPARTMENT

**Dept-61**

JOB OR

SUBJECT

**ANGEL ST. MILL**

CALCULA

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	Yes	No	BR
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	BR
	8113530	1000	434	No	No	BR
	8037218	300	209	No	No	BR
	8113527	1000	434	Yes?	No	BR
BEATER ROOM DISCONNECTS	-	-	50-100	No	No	BR
SUBSTATION #3 (SORTING BASEMENT)	8113529	750	380	No	No	BR
	8037219	200	115	No	No	BR

MISCELLANEOUS MATERIAL

LOCATION	DESCR.	ADDITIONS (GAL)	CONTENTS (GAL)	LEAKS	SPILLS	INSP. BY
SUBSTATION #2	USED OIL		20-30	No	No	BR
MCC in CONVEYOR Room	136880	1500	DRY Type			

RECYCLED FIBER DIVISION **ST REGIS** PAPER COMPANY

ENGINEERING CALCULATIONS

SHEET N

DATE 4-4-88

PLANT

OF

DESCRIPTION OF JOB				DEPARTMENT		JOB ORD.	
TRANSFORMER INSPECTION - MONTHLY				61			
SUBJECT						CALCULATED	
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	moisture	NO		
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO		
	8113530	1000	434	NO	NO		
	8037218	300	209	NO	NO		
	8113527	1000	434	NO ?	NO		
BEATER ROOM DISCONNECTS	—	—	50-100	NO	NO		
SUBSTATION #3 (TINE BASEMENT)	8113529	750	380	NO	NO		
	8037219	200	115	NO	NO		

## MISCELLANEOUS MATERIAL

LOCATION	DESCR.	ADDITIONS (GAL)	CONTENTS (GAL)	LEAKS	SPILLS	INSP. BY	
SUBSTATION #2	USED OIL		20-30				
<p>Transformer consultants contacted to inspect sub #1 and #2</p>							



Acts 4:12

**DIVISION OF  
SD Myers**

**TRANSFORMER  
CONSULTANTS**

*Repair*

Phone: (216) 633-  
Toll Free: (800) 3-

May 23, 1988

Mr. Steve Weers  
Waldorf Corp.  
177 Angell St.  
Battle Creek, MI. 49016

REF: 06194

Gentlemen:

Enclosed are the results of the transformer oils recently tested by our personnel.

Please refer to the section of the test data master sheet for the specific type of tests performed on your oil.

Normal servicing of units that contain PCB's in excess of 50 PPM is restricted by Federal Law. We can, however, lower the PCB concentration to acceptable limits. If you wish to discuss the options available please feel free to contact us.

Should you require further work on some of your transformers, a formal quotation will be forwarded per your request.

If you have any questions on this or any related matter, do not hesitate to contact our Tallmadge, Ohio office (216/633-2666).

Very truly yours,

CRAIG SCHLEY  
REGIONAL SALES

CS/jm



Acts 4:12

**DIVISION OF  
EDMONT**

**TRANSFORMER  
CONSULTANTS**

P.O. BOX 4724, ABERN, OH 44810

Phone: (216) 633-21  
Toll Free: (800) 321

TEST SURVEY RECAP

CUSTOMER: CINCINNATI

WALDORF CORPORATION

BATTLE CREEK MI

4/17/69

\* SUMMARY OF RESULTS \*

NOTE: EPA & CFR-1701 842-63 (1984)	TOTAL GALLONS OF LIQUID	750
any transformer not tested for pcb content (----)	TOTAL UNITS INY-POB	4
may be considered contaminated 150-200ppm	TOTAL WVD SOX PCB TEST	0
	TOTAL UNITS CONTAMINATED	1
	TOTAL UNITS PCB	2
	TOTAL REQUIRING PCB TEST	0
	TOTAL REQUIRING SERVICE	1
	TOTAL WVA	1350
	ESTIMATED VALUE OF UNITS	\$3,100.00

The national average cost of annual transformer maintenance is  
6 pct of transformer investment. (EPRC JOURNAL, March, 1966). Based  
on the above estimated value of units, average annual maintenance  
for these units would be \$1,896.00

A review of your transformers require services. If you did not receive a quotation with  
these test reports, please call our ABERN office for a comprehensive study and proposal  
to solve the various problems.

MS-15



Acts 4:12

**DIVISION OF  
EDMETERS**

**TRANSFORMER  
CONSULTANTS**

P.O. BOX 4723, CROOK, OH 44310

Phone: (216) 6c  
Toll Free: (800)

**TEST SURVEY RECORD**

CUSTOMER	WALDORF CORPORATION	BATTLE CREEK MI	4/15/85			
TOP SUBSTATION	SIZE GALLONS LIQUID	PCB	PCB	LET DC RE TOP PF SERVICE		
NAME	NON	TYPE	CLASS	DATE	PRODUCT	
5 CONVERSE ARROLL FLY	600	509 ASHRAEL PCB		AC	AC	ACCEPTABLE DATA-RE
7 JAMES HOUSE	750	600 ASHRAEL PCB		AC	AC	REPAIR/PAINT: SEE
12		50 OIL	NON-PCB	3/30/86		ACCEPTABLE DATA-RE
13		50 OIL	NON-PCB	3/30/86		ACCEPTABLE DATA-RE
14		50 OIL	NON-PCB	3/30/86		ACCEPTABLE DATA-RE
15		50 OIL	NON-PCB	3/30/86		ACCEPTABLE DATA-RE
16		50 OIL	NON-PCB	3/30/86		ACCEPTABLE DATA-RE

*Converse / Powers Subs inspected and  
reported by T.C.*

DATE \_\_\_\_\_

8-1-88

PLANT

OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER NO.	
SUBJECT						CALCULATIONS	
TRANSFORMER INSPECTION - MONTHLY					61		
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.V.	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	W.A.V.	
	8113530	1000	434	No	No	W.A.V.	
	8037218	300	209	No	No	W.A.V.	
	8113527	1000	434	No	No	W.A.V.	
BEATER ROOM DISCONNECTS	—	—	50-100	No	No	W.A.V.	
SUBSTATION #3 (W. OF BASEMENT)	8113529	750	380	No	No	W.A.V.	
	8037219	200	115	No	No	W.A.V.	

MISCELLANEOUS MATERIAL

[illegible]

DATE 9-4-88

**PLANT**

OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER No.
TRANSFORMER INSPECTION-MONTHLY	61	
SUBJECT		CALCULATIONS
ANGEL ST. MILL		

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y.	
STATION #1 (POWER HOUSE)	8113528	750	380	No	No	D.P.V	
STATION #2 (EYDR ROOM)	7026594	1000	240	No	No		
	8113530	1000	434	No	No		
	8037218	300	209	No	No		
	8113527	1000	434	No	No		
TER ROOM CONNECTS	—	—	50-100	No	No	•	
STATION #3 (1 <sup>ST</sup> BASEMENT)	8113529	750	380	No	No		
	8037219	200	115	No	No		

MISCELLANEOUS MATERIAL

[illegible]



## ENGINEERING CALCULATIONS.

DATE 1/17 12-88 PLANT . OF

### DESCRIPTION OF JOB

DEPARTMENT

## JOB ORDER

# TRANSFORMER INSPECTION-MONTHLY

601

**SUBJECT**

### CALCULATION

ANGEL ST. MILL

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113526	750	380	No	No	W.A.U.	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	}	
	8113530	1000	434	No	No		
	8037218	300	209	No	No		
	8113527	1000	434	No	No		
FEATER ROOM DISCONNECTS	—	—	50-100	No	No		
SUBSTATION #3 N. OF BASEMENT	8113529	750	380	No	No	}	
	8037219	200	115	No	No		

MISCELLANEOUS MATERIAL

[illegible]

## ENGINEERING CALCULATIONS

SHEET NO.

DATE *Dec 12, 1988*

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPIILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.U.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
HEATER ROOM DISCONNECTS	----	----	50-100	No	No	
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	
	8037219	200	115	No	No	

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPIILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	W.A.U.

## ENGINEERING CALCULATIONS

SHEET NO.

DATE JANUARY 89

PLANT

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.V.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	
	8113530	1000	434	No	No	
	9037218	300	209	No	No	
	8113527	1000	434	No	No	
EATER ROOM DISCONNECTS	----	----	50-100	No	No	
SUBSTATION #3 (OILING ROOM)	8113529	750	380	No	No	
	8037219	200	115	No	No	
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	W.A.V.

SHEET NO.

DATE Feb. 89

PLANT

**OF**

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER NO.
	61	
SUBJECT		CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.U.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	}
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
EATER ROOM DISCONNECTS	—	—	50-100	No	No	
SUBSTATION #3 (BOILING BSMT.)	8113529	750	380	No	No	
	8037219	200	115	No	No	

MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPIILLS	INSPECTED BY
JBSTATION #2	USED OIL		20-30	No	No	W.A.U.

## ENGINEERING CALCULATIONS

SHEET NO.

DATE *March, 1989*

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

*61*

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	<i>No</i>	<i>No</i>	<i>D.V.</i>
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	<i>No</i>	<i>No</i>	<i>"</i>
	8113530	1000	434	<i>No</i>	<i>No</i>	<i>"</i>
	8037218	300	209	<i>No</i>	<i>No</i>	<i>"</i>
	8113527	1000	434	<i>No</i>	<i>No</i>	<i>"</i>
EATER ROOM DISCONNECTS	—	—	50-100	<i>No</i>	<i>No</i>	<i>"</i>
SUBSTATION #3 BOATING BSMT.	8113529	750	380	<i>No</i>	<i>No</i>	<i>"</i>
	8037219	200	115	<i>No</i>	<i>No</i>	<i>"</i>

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	<i>No</i>	<i>No</i>	<i>D.V.</i>

## ENGINEERING CALCULATIONS

SHEET NO.

DATE April 89.

PLANT

OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER NO.
	<u>61</u>	
SUBJECT		CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	MJ
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	MJ
	8113530	1000	434	NO	NO	MJ
	8037218	300	209	NO	NO	MJ
	8113527	1000	434	NO	NO	MJ
EATER ROOM DISCONNECTS	---	---	50-100	NO	NO	MJ
SUBSTATION #3 (OILING BSMT.)	8113529	750	380	NO	NO	MJ
	8037219	200	115	NO	NO	MJ

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	NO	NO	MIKE JA

SHEET NO.

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.U.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	f
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
EATER ROOM DISCONNECTS	—	—	50-100	No	No	f
SUBSTATION #3 (OILING BSMT.)	8113529	750	380	No	No	
	8037219	200	115	No	No	
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	W.A.U.

## ENGINEERING CALCULATIONS

SHEET NO.

DATE *June 89*

PLANT

OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER NO.
	<i>61</i>	
SUBJECT		CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	<i>? IN PAN</i>	<i>No</i>	<i>WAL.</i>
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	<i>No</i>	<i>✓</i>	
	8113530	1000	434	<i>No</i>	<i>✓</i>	
	8037218	300	209	<i>No</i>	<i>✓</i>	
	8113527	1000	434	<i>No</i>	<i>✓</i>	
EATER ROOM DISCONNECTS	----	----	50-100	<i>No</i>	<i>✓</i>	
SUBSTATION #3 (OILING BSMT.)	8113529	750	380	<i>No</i>	<i>No</i>	
	8037219	200	115	<i>No</i>	<i>No</i>	

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	<i>No</i>	<i>No</i>	

## ENGINEERING CALCULATIONS

SHEET NO.

DATE *July 89*

PLANT

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO	
SUBJECT					CALCULATION	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 POWER HOUSE)	8113528	750	380	? <i>FEW DROPS - PAN</i>	<i>No</i>	<i>W.A.W.</i>
SUBSTATION #2 CONVEYOR ROOM)	7026594	1000	240	<i>No</i>	<i>"</i>	
	8113530	1000	434	<i>No</i>	<i>"</i>	
	8037218	300	209	<i>No</i>	<i>"</i>	
	8113527	1000	434	<i>No</i>	<i>"</i>	
EATER ROOM DISCONNECTS	----	----	50-100	-----		
SUBSTATION #3 BOILING BSMT.	8113529	750	380	<i>No</i>	<i>No</i>	<i>W.A.W.</i>
	8037219	200	115	<i>No</i>	<i>No</i>	<i>W.A.W.</i>
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPIILLS	INSPECT BY
SUBSTATION #2	USED OIL		20-30	<i>No</i>	<i>No</i>	

## ENGINEERING CALCULATIONS

SHEET NO.

DATE *Aug 89*

PLANT

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.W.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	Y
	8113530	1000	434	No	No	Y
	8037218	300	209	No	No	Y
	8113527	1000	434	No	No	
SEATER ROOM DISCONNECTS	---	---	50-100	No	No	
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	
	8037219	200	115	No	No	
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	

## ENGINEERING CALCULATIONS

SHEET NO.

DATE

9/1/89

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	D.P.V.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	"
	8113530	1000	434	No	No	"
	8037218	300	209	No	No	"
	8113527	1000	434	No	No	"
HEATER ROOM DISCONNECTS	—	—	50-100	No	No	"
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	"
	8037219	200	115	No	No	"

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	D.P.V.

## ENGINEERING CALCULATIONS

SHEET NO.

DATE

10/6/89

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPIILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	K.E.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	"
	8113530	1000	434	No	No	"
	8037218	300	209	No	No	"
	8113527	1000	434	No	No	"
HEATER ROOM DISCONNECTS	----	----	50-100	No	No	"
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	"
	8037219	200	115	No	No	"

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	K.E.

## ENGINEERING CALCULATIONS

SHEET NO.

DATE

11/5/89

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
HEATER ROOM DISCONNECTS	----	----	50-100	No	No	
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	
	8037219	200	115	No	No	

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	

## ENGINEERING CALCULATIONS

SHEET NO.

DATE DEC-2-89

PLANT

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	DPV
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	DPV
	8113530	1000	434	No	No	DPV
	8037218	300	209	No	No	DPV
	8113527	1000	434	No	No	"
	SEATER ROOM DISCONNECTS	—	—	50-100	No	No
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	"
	8037219	200	115	No	No	"
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTE BY
SUBSTATION #2	USED OIL		20-30	No	No	DPV

PCB Annual Report

<u>No.</u>	<u>Location</u>		<u>Size</u> <u>kVA</u>	<u>Gallons</u>	<u>Type</u>
1.	Conveyor Angel	PLT	1000	240	Arkand
2.	Conveyor Angel	PLT	1000	434	"
3.	Conveyor Angel	PLT	300	209	"
4.	Conveyor Angel	PLT	1000	434	"
5.	Power House		750	380	"
6.	Casting Room		200	115	"
7.	Casting Room		750	380	"

Total kg of PCB transformer:

$$2192 \text{ gal} = 8298 \text{ lbs} = 3763 \text{ kg}$$

Assumes  $1 \text{ g} = 3.78 \text{ lbs}$

$$1 \text{ lb} = 0.45 \text{ kg.}$$

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2035 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#:SAMPLE #1 SUB #3

P.O. NUMBER :097-52516-01  
JOB NUMBER 165847

ATTN:MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMIT  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	12 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGH SEDIMENT
SPECIFIC GRAVITY	D-1510	1.542	1.40 TO 1.62
WATER CONTENT	D-1533	35 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.611	-----
*VISCOSITY	D-443	55	50-60 SUS
*RESISTIVITY	D-1169	.8X69	1X109

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS:THIS SAMPLE FALLS WAY BELOW THE RECOMMEND LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

GENERAL ELECTRIC COMPANY  
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CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #2 SUB #2

P.O. NUMBER : 097-52515-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST            ASTM #            08/28/89            SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	11 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MB KOH/G	D-974	0.003	0.15 MB. KOH/G MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.546	1.40 TO 1.62
WATER CONTENT	D-1533	34 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	53	50-60 SUS
*RESISTIVITY	D-1169	.7X10 <sup>4</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkio Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

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6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #3 WET END  
LIGHTING SUB

P.O. NUMBER : 097-52516-01  
JOB NUMBER 165847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMIT  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	13 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/ MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.544	1.40 TO 1.62
WATER CONTENT	D-1533	31 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-443	53	50-60 SUS
*RESISTIVITY	D-1169	.8X7 <sup>8</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

THE CHICAGO 'LIL'  
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CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #4 SUB #1

P.O. NUMBER : 097-52516-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMIT  
\*\*\*\*\*

DIELECTRIC D-877			
STRENGTH KV	D-877	9 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/( MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.545	1.40 TO 1.62
WATER CONTENT	D-1533	41 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	52	50-60 SUS
*RESISTIVITY	D-1169	.5X2 <sup>4</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

GENERAL ELECTRIC COMPANY  
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6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #3  
POWERHOUSE SUB

P.O. NUMBER : 097-52515-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMIT  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	11 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/ MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1610	1.544	1.40 TO 1.62
WATER CONTENT	D-1533	38 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	53	50-60 SUS
*RESISTIVITY	D-1169	.7X10 <sup>10</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkio Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

GENERAL ELECTRIC COMPANY  
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6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #6 DRY END  
LIGHTING SUB

P.O. NUMBER 1097-52516-01  
JOB NUMBER :65847

ATTN:MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877			
STRENGTH KV	D-877	10 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/G MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1510	1.544	1.40 TO 1.62
WATER CONTENT	D-1533	35 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.512	-----
*VISCOSITY	D-445	54	50-60 SUS
*RESISTIVITY	D-1169	.7X10 <sup>3</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #7 DRY END  
POWER PANEL SUB

P.O. NUMBER : 097-52516-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	11 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/G MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.545	1.40 TO 1.62
WATER CONTENT	D-1533	34 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	52	50-60 SUS
*RESISTIVITY	D-1159	.7X10 <sup>6</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS. ....

TESTED BY: *Arkie Salkil*  
ARKIE SALKIL  
LAB SPECIALIST

APPROVED BY: *John Engstrom*  
JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS



Acts 4:12

**DIVISION OF**  
**ED Myers**

**TRANSFORMER**  
**CONSULTANTS**

P.O. Box 47  
Akron, Ohio  
Phone: (216  
Toll Free: (8

March 15, 1988

Mr. Steve Weers  
Waldorf Corp.  
177 Angell St.  
Battle Creek, MI. 49016

REF: Verbal

Gentlemen:

Enclosed are the results of the transformer oils recently tested by our personnel.

Please refer to the section of the test data master sheet for the specific type of tests performed on your oil.

Normal servicing of units that contain PCB's in excess of 50 PPM is restricted by Federal Law. We can, however, lower the PCB concentration to acceptable limits. If you wish to discuss the options available please feel free to contact us.

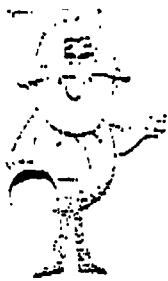
Should you require further work on some of your transformers, a formal quotation will be forwarded per your request.

If you have any questions on this or any related matter, do not hesitate to contact our Tallmadge, Ohio office (216/533-2666).

Very truly yours,

CRAIG SCHLEY  
REGIONAL SALES

CS/jm



RE: PCB CONTENT RESULTS

Gentlemen:

Enclosed with this letter are the results of your PCB tests.

Please note that the Federal Register (vol. 44, no. 106, May 31, 1979, p. 31517) defines these three classes of transformers: (1) PCB transformers (those units containing 500 PPM or greater PCB's); (2) PCB-contaminated transformers (those units containing 50-500 PPM PCB) and (3) non-PCB transformers (those units containing less than 50 PPM PCB).

We have provided as an additional service to you color-coded labels for your transformers. These colors are: (1) YELLOW...for PCB equipment; (2) ORANGE...for PCB-contaminated equipment, and (3) GREEN...for non-PCB equipment. Only those units in category (1), PCB equipment, are required by the EPA to have labels.

The Same Federal Register (pg. 31538) states: "EPA will not consider it to be good judgement to assume that the sample has less than 50 PPM PCB because the experimental error of the procedure overlaps the cut-off point. Through experimental data and by cross-checking with other laboratories, we have determined a deviation of plus or minus 10%. For this reason, we have established our limits as below 45 PPM for non-PCBs, 45-450 PPM for PCB-contaminated oil and 450+ for PCB transformer oil.

A point to remember is that all samples other than transformer oil are classified as PCB's at 50 PPM or more.

A few of your test results may be reported using the following terms or abbreviations:

ND	- None Detected
Trace	- Less than 1 PPM
UP	- Unidentified Peaks - the result from the chromatograms displayed major peaks <u>NOT ASSOCIATED</u> with PCB's normally found in electrical transformer fluid.

Very truly yours,

*John Dargie*  
John Dargie  
Regional Sales Manager

JD/su

Enclosures: Updated masters -- file and discard any prior copies  
Colored labels -- apply to respective transformer



ACTS 4:12

**DIVISION OF  
ED INVEST**

**TRANSFORMER  
CONSULTANTS**

P.O. BOX 4724, AKRON, OH 44310

Phone: (216) 6  
Toll Free: (800

TEST SURVEY RECAP

CUST# 35123000

WALDORF CORPORATION

BATTLE CREEK MI

3/18/88

\* SUMMARY OF RESULTS \*

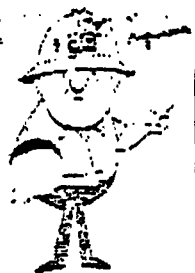
NOTE: EPA & CFR40-761 state that  
any transformer not tested for PCB content  
must be considered contaminated (50-500ppm)

TOTAL GALLONS OF LIQUID	2025
TOTAL UNITS NON-PCB	0
TOTAL W/O SENT PCB TEST	0
TOTAL UNITS CONTAMINATED	0
TOTAL UNITS PCB	0
TOTAL REQUIRING PCB TEST	0
TOTAL REQUIRING SERVICE	7
TOTAL KVA	5200
ESTIMATED VALUE OF UNITS	114,400.00

The national average cost of annual transformer maintenance is  
6 pct of transformer investment. (EPRI JOURNAL, March, 1986). Based  
on the above estimated value of units, average annual maintenance  
for these units would be \$6,864.00

A number of your transformers require service. If you did not receive a quotation with  
these test reports, please call our AKRON office for a comprehensive study and proposal  
to solve the various problems.

1 transformer taken out of service and  
disposed of through G.E. See attached report.  
(River Sub # S/W 8037220)



Acts 4:12

**DIVISION OF  
EDMUNDS****TRANSFORMER  
CONSULTANTS**

P.O. BOX 4724, AKRON, OH 44310

Phone: (216) 833-2688  
Toll Free: (800) 321-9580

## TEST SURVEY RECAP

CUST# 36125000

WALDRAF CORPORATION

BATTLE CREEK MI

3/09/88

TC#	SUBSTATION NAME	SIZE KVA	GALLONS LIQUID TYPE	PCB CLASS	PCB DATE	LST GC KF ICP PF	SERVICE PRODUCT
3	CONVEYOR ANGELL PLT	1000	240 ASKAREL PCB			AC AC	REPAIR/PAINT: SEE VISUAL DATA
4	CONVEYOR ANGELL PLT	1000	434 ASKAREL PCB			AC AC	REPAIR/PAINT: SEE VISUAL DATA
5	CONVEYOR ANGELL PLT	900	209 ASKAREL PCB			QU AC	DEHYDRATION
6	CONVEYOR ANGELL PLT	1000	434 ASKAREL PCB			QU AC	DEHYDRATION
7	POWER HOUSE	750	380 ASKAREL PCB			QU AC	REPAIR/PAINT: SEE VISUAL DATA DEHYDRATION
8	COATING ROOM SUB	200	115 ASKAREL PCB			AC AC	ACCEPTABLE DATA-RETEST 1 YEAR
9	COATING SUB	750	380 ASKAREL PCB			AC AC	REPAIR/PAINT: SEE VISUAL DATA
<del>10</del>	<del>RIVER SUB ANGELL PLT</del>	<del>200</del>	<del>104 ASKAREL PCB</del>			<del>AC AC</del>	<del>REPAIR/PAINT: SEE VISUAL DATA</del>

3763 kg

**DIVISION OF**  
**EDMUNDS**

**TRANSFORMER**  
**CONSULTANTS**

P.O. Box 4724  
Akron, Ohio 44310  
Phone: (216) 633-2666  
Toll Free: (800) 321-9580

April 13, 1987

Waldorf Corp.  
177 Angell St.  
Battle Creek MI 49016

ATTN: Steve Weers

REF: 03675

Gentlemen:

Enclosed are the results of the transformer oils recently tested by our personnel.

Please refer to the section of the test data master sheet for the specific type of tests performed on your oil.

Normal servicing of units that contain PCB's in excess of 50 PPM is restricted by Federal Law. We can, however, lower the PCB concentration to acceptable limits. If you wish to discuss the options available please feel free to contact us.

Should you require further work on some of your transformers, a formal quotation will be forwarded per your request.

If you have any questions on this or any related matter, do not hesitate to contact our Tallmadge, Ohio office (216/633-2666).

Very truly yours,

*Craig Schley*  
Craig Schley  
Regional Sales

CS/jm

# DIVISION OF TRANSFORMER EDWARDS CONSULTANTS

P.O. BOX 4722, AKRON, OH 44310

## TEST SURVEY RECAP

CUST# 36123000

WALDORF CORPORATION

BATTLE CREEK MI

4/10/67

## \* SUMMARY OF RESULTS \*

NOTE: EPA # CFR40-761 states that

any transformer not tested for pcb content

must be considered contaminated (50-500ppm)

TOTAL GALLONS OF LIQUID	2326
TOTAL UNITS NON-PCB	0
TOTAL W/O 50MI PCB TEST	0
TOTAL UNITS CONTAMINATED	0
TOTAL UNITS PCB	2
TOTAL REQUIRING PCB TEST	0
TOTAL REQUIRING SERVICE	0
TOTAL KVA	5200
ESTIMATED VALUE OF UNITS	114,400.00

The national average cost of annual transformer maintenance is  
 6 pct of transformer investment. (EPRI JOURNAL, March, 1966). Based  
 on the above estimated value of units, average annual maintenance  
 for these units would be \$6,864.00

A number of your transformers require service. If you did not receive a quotation with  
 these test reports, please call our AKRON office for a comprehensive study and proposal  
 to solve the various problems.

**DIVISION OF TRANSFORMER  
SUPPLIES CONSULTANTS**

P.O. BOX 4724, AKRON, OH 44310

TEST SURVEY REPORT

CUST# 36125800

WALTON CORPORATION

BATTLE CREEK MI

4/13/87

TO# SUBSTATION NAME SIZE GALLONS LITRATED PCB DATE LST GC RF TSP SF SERVICE PRODUCT

3	CONVEYOR ANODEL PLT	1000	270 ASKAREL PCB	PCB	908	AC	AC	REPAIR-SEE VISUAL INSPECTION
4	CONVEYOR ANODEL PLT	1000	424 ASKAREL PCB	PCB	908	AC	AC	REPAIR-SEE VISUAL INSPECTION
5	CONVEYOR ANODEL PLT	515	219 ASKAREL PCB	PCB	908	AC	AC	ACCEPTABLE DATA-RETEST 1 Y
6	CONVEYOR ANODEL PLT	1000	434 ASKAREL PCB	PCB	908	AC	AC	RETEST ONE YEAR
7	POWER HOUSE	750	334 ASKAREL PCB	PCB	908	AC	AC	REPAIR-SEE VISUAL INSPECTION
8	COATING ROOM SIB	200	115 ASKAREL PCB	PCB	908	AC	AC	ACCEPTABLE DATA-RETEST 1 Y
9	COATING SIB	750	320 ASKAREL PCB	PCB	908	AC	AC	ACCEPTABLE DATA-RETEST 1 Y
10	RIVER SIB ANODEL PLT	200	154 ASKAREL PCB	PCB	908	AC	AC	ACCEPTABLE DATA-RETEST 1 Y

3993 L

<u>No.</u>	<u>Location</u>	<u>Size kg</u>	<u>Gallons</u>	<u>Type</u>
		1000	240	Arkanoid
1.	Conveyor Angell PLT	1000	434	"
2.	Conveyor Angell PLT	300	259	"
3.	Conveyor Angell PLT	1000	434	"
4.	Conveyor Angell PLT	750	380	"
5.	Power House	200	115	"
6.	Casting Room	750	380	"
7.	Casting Room	200	134	"
8.	River Sub			

Total kg of PCB transshipment:

3943 kg.

Wilder's tenure of ownerships did not begin until July 1985.

Letters to Battle Creek  
Fire Dept.



177 Angell Street  
Battle Creek, Michigan 49016-3433  
519 963-5511

February 26, 1988

City of Battle Creek Fire Department  
195 East Michigan Avenue  
Battle Creek, MI 49017

Attn: Charles Owens, Department Director

Dear Mr. Owens:

Attached please find the completed Tier Two Inventory Form for 1987 and Confidential Location Information Sheet of chemical(s) for which we have a M.S.D.S. and a quantity in excess of 10,000 lbs. as required per Title III of S.A.R.A.. In preparing this information, Waldorf has relied upon the manufacturer's M.S.D.S.. As such, the determination of physical and health hazards is offered in good faith but without warranty or representation.

We have also forwarded the above information to the State Emergency Response Commission and the Local Emergency Planning Commission.

If you have any questions, please contact the undersigned.

Yours truly,

Randy B. Yates  
Coordinator Safety, Security and Training

enc.

cc. G. Kaziukewicz

<b>Tier Two</b> <b>EMERGENCY</b> <b>AND</b> <b>HAZARDOUS</b> <b>CHEMICAL</b> <b>INVENTORY</b>  Specific Information by Chemical  1.	<b>Facility Identification</b> Name <u>Waldorf Corporation</u> Street Address <u>177 Angell Street</u> City <u>Battlecreek</u> State <u>MI</u> Zip <u>49016</u> SIC Code <u>2631</u> Date & Brand <u>07-256-8165</u>		<b>Owner/Operator Name</b> Name <u>Waldorf Corporation</u> Phone <u>1616-963-5511</u> Moll Address <u>177 Angell St., Battlecreek, MI 49016</u>	
	<b>Emergency Contact</b> Name <u>Randy B. Yates</u> Title <u>Director Safety, Security and Training</u> Phone <u>1616-963-5511 ext. 254</u> Telex Phone <u>1616-966-7006 Pager</u>		Name <u>Mark Shapton</u> Title <u>Engineer</u> Phone <u>1616-963-5511 ext. 340</u> Telex Phone <u>1616-966-7201 Pager</u>	
	<b>FOR OFFICIAL USE ONLY</b> Date Received _____			

Important: Read all instructions before completing form

Reporting Period From January 1 to December 31, 19 87

Chemical Description	Physical and Health Hazards (check all that apply)	Inventory		Storage Codes and Locations (Non-Confidential)	
		Max. Daily Amount (code)	Avg. Daily Amount (code)	No. of Days On-site (days)	Storage Code
CAS <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Trade Secret <input type="checkbox"/> Chem. Name <u>Polychlorinated Biphenyls</u> Check all that apply: <input type="checkbox"/> Pure <input type="checkbox"/> Mix <input type="checkbox"/> Solid <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Gas	<input type="checkbox"/> Fire <input type="checkbox"/> Sudden Release of Pressure <input type="checkbox"/> Reactivity <input type="checkbox"/> Immediate (acute) <input checked="" type="checkbox"/> Delayed (chronic)	<u>03</u>	<u>03</u>	<u>365</u>	<input type="checkbox"/> Confidential <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
CAS <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Trade Secret <input type="checkbox"/> Chem. Name <u>Penford Gum 270 (Starch)</u> Check all that apply: <input type="checkbox"/> Pure <input type="checkbox"/> Mix <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas	<input type="checkbox"/> Fire <input type="checkbox"/> Sudden Release of Pressure <input type="checkbox"/> Reactivity <input type="checkbox"/> Immediate (acute) <input type="checkbox"/> Delayed (chronic) None per MSDS	<u>03</u>	<u>03</u>	<u>365</u>	<input type="checkbox"/> Confidential <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
CAS <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Trade Secret <input type="checkbox"/> Chem. Name <u>PRO-COTE 200</u> Check all that apply: <input type="checkbox"/> Pure <input type="checkbox"/> Mix <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas	<input type="checkbox"/> Fire <input type="checkbox"/> Sudden Release of Pressure <input type="checkbox"/> Reactivity <input type="checkbox"/> Immediate (acute) <input type="checkbox"/> Delayed (chronic) None per MSDS	<u>03</u>	<u>03</u>	<u>365</u>	<input type="checkbox"/> Confidential <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

**Certification (Read and sign after completing all sections)**  
 I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my review of those documents and the information, I believe that the submitted information is true, accurate, and complete.  
Randy B. Yates Cond. Safety Sec. Training  
 Name and title of owner/operator or OHS owner/operator's authorized representative

**Optional Attachments (Check one)**  
☐ I have attached a site plan  
☐ I have attached a list of site coordinate observations

38372 Federal Register / Vol. 52, No. 199 / Thursday, October 15, 1987 / Rules and Regulations

<b>Tier Two</b> <b>EMERGENCY</b> <b>AND</b> <b>HAZARDOUS</b> <b>CHEMICAL</b> <b>INVENTORY</b>  Specific Information by Chemical	<b>Facility Identification</b> Name <u>Waldorf Corporation</u> Street Address <u>177 Angell Street</u> City <u>Battlecreek</u> State <u>MI</u> Zip <u>49016</u> SIC Code <u>2631</u> Dun & Bradstreet <u>07256-8165</u>		<b>Owner/Operator Name</b> Name <u>Waldorf Corporation</u> Phone <u>1616 963-5511</u> Mailing Address <u>177 Angell St., Battlecreek, MI 49016</u>	
	Emergency Contact Name <u>Randy R. Yates</u> Title <u>Director Safety, Security and Training</u> Phone <u>1616 963-5511 ext. 254</u> H. Phone <u>1616 966-7006</u> Pager		Name <u>Mark Shapton</u> Title <u>Engineer</u> Phone <u>1616 963-5511 ext. 340</u> H. Phone <u>1616 966-7201</u> Pager	
	FOR OFFICIAL USE ONLY ID # _____ Date Received _____			

Important: Read all instructions before completing form

Reporting Period From January 1 to December 31, 19 87

Confidential Location Information Sheet		Storage Codes and Locations (Confidential)	
CAS #	Chem. Name	Storage Codes	Storage Locations
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Polychlorinated Biphenyls	<u>R 1 4</u>	Located in conveyor room transformer, coating room transformer ground floor, power house transformer ground floor, pumping station transformer ground floor.
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Penford Gum Starch 270 (Starch)	<u>J 1 4</u>	Located in the conveyor room storage area, and the coating dept. on the first floor.
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	PRO-COTE 200	<u>J 1 4</u>	Located in the conveyor room storage area, and the coating dept. on the second floor.
Certification: (Read and sign after completing all sections) I certify under penalty of law that I have personally examined and am familiar with the information submitted in this form and all attached documents, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. <u>Randy R. Yates Safety Sec. Training</u> Name and official title of authorized person OR owner/operator's authorized representative		Optional Attachments (Check one) <input type="checkbox"/> I have attached a site plan <input type="checkbox"/> I have attached a list of site coordinate observations <u>2-24-87</u> Date signed	



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

23 February 1989

City of Battle Creek Fire Department  
195 East Michigan Avenue  
Battle Creek, MI 49017

Attn: Charles Owens, Department Director

Mr. Owens,

Attached please find the completed Tier Two Inventory Form 1988 and Confidential Location Information Sheet of Chemical(s) for which we have a M.S.D.S. and a quantity in excess of 10,000 lbs. as required per Title III of S.A.H.A.. In preparing this information, Waldorf has relied upon the manufacturers M.S.D.S.. As such, the determination of physical and health hazards is offered in good faith but without warranty or representation.

We have also forwarded the above information to the State Emergency Response Commission and the Local Emergency Planning Commission.

If you have any questions, please contact me at your convenience.

Yours truly,

Randy B. Yates  
Safety/Security Supervisor  
Waldorf Corporation, Battle Creek Plant

enc;

copies; G. Kaziukewicz  
L. Spurgeon  
D. Opala

Page 1 of 1  
Form Approved OMB No. 2680-0047

<b>Facility Identification</b> Name: <u>Waldorf Corporation</u> Street Address: <u>177 Angell Street</u> City: <u>Battle Creek</u> State: <u>MI</u> Zip: <u>49816</u> SIC Code: <u>261311</u> <u>517215</u> <u>811615</u> FOR OFFICIAL USE ONLY Date Received: <u>2-21-88</u>		<b>Owner/Operator Name</b> Name: <u>Waldorf Corporation</u> Phone: <u>616-963-5511</u> Street Address: <u>177 Angell Street Battle Creek, MI 49816</u> Emergency Contact: Name: <u>Randy Yates</u> Title: <u>Safety Supervisor</u> Phone: <u>616-963-5511</u> Name: <u>Don Opala</u> Title: <u>Engineer</u> Phone: <u>616-963-5511</u>									
<b>Inventory</b> Name: <u>Polychlorinated Biphenyls</u> CAS: <u>1336-36-8</u> Formula: <u>C<sub>12</sub>H<sub>10</sub>Cl<sub>2</sub></u> Quantity: <u>200</u> lbs Date: <u>2/21/88</u>				<b>Physical and Health Hazards</b> Reacts at 200 °C: <input type="checkbox"/> Flammable: <input type="checkbox"/> Corrosive: <input type="checkbox"/> Toxic: <input type="checkbox"/> Irritant: <input type="checkbox"/> Other: <input type="checkbox"/>				<b>Storage Codes and Locations</b> Storage Code: <u>CONFIDENTIAL</u> Storage Location: <u>CONFIDENTIAL</u>			
<b>Chemical Description</b> Name: <u>Polychlorinated Biphenyls</u> CAS: <u>1336-36-8</u> Formula: <u>C<sub>12</sub>H<sub>10</sub>Cl<sub>2</sub></u> Quantity: <u>200</u> lbs Date: <u>2/21/88</u>				<b>Physical and Health Hazards</b> Reacts at 200 °C: <input type="checkbox"/> Flammable: <input type="checkbox"/> Corrosive: <input type="checkbox"/> Toxic: <input type="checkbox"/> Irritant: <input type="checkbox"/> Other: <input type="checkbox"/>				<b>Storage Codes and Locations</b> Storage Code: <u>CONFIDENTIAL</u> Storage Location: <u>CONFIDENTIAL</u>			
<b>Chemical Description</b> Name: <u>Polychlorinated Biphenyls</u> CAS: <u>1336-36-8</u> Formula: <u>C<sub>12</sub>H<sub>10</sub>Cl<sub>2</sub></u> Quantity: <u>200</u> lbs Date: <u>2/21/88</u>				<b>Physical and Health Hazards</b> Reacts at 200 °C: <input type="checkbox"/> Flammable: <input type="checkbox"/> Corrosive: <input type="checkbox"/> Toxic: <input type="checkbox"/> Irritant: <input type="checkbox"/> Other: <input type="checkbox"/>				<b>Storage Codes and Locations</b> Storage Code: <u>CONFIDENTIAL</u> Storage Location: <u>CONFIDENTIAL</u>			

Inventory: Read all instructions before completing form

Reporting Period: From January 1 to December 31, 1987

Certification: (Read and sign only completing all entries)  
 I, Randy Yates, Safety Supervisor, certify that the information provided in this form is true and correct to the best of my knowledge and belief.  
 Signature: Randy Yates Date: 21 Feb 1988  
 Title: Safety Supervisor  
 I have attached a file plan showing attached a list of all the information submitted.



UNITED STATES POSTAL SERVICE

# DOMESTIC RETURN RECEIPT

GE Disposal



Industry Services Engineering  
General Electric Company  
575 Kent Street, NW, Grand Rapids, MI 49503  
404-4121-1319

May 19, 1988

Quotation No. 389E00165

Waldorf Corporation  
177 Angell Street  
Battle Creek, Michigan 49016

Attention: Mr. Steve Weers

Reference: PCB Transformer Disposal

Gentlemen:

In response to your request, the General Electric Company, Industrial Sales and Services Division, Grand Rapids Office, is pleased to submit our proposal to provide services at your Battle Creek facility as follows:

A. Remove and dispose of one (1) 200 KVA PCB transformer.

ISSD will provide technical supervision, craft labor, tools, and equipment required to complete the removal work.

A qualified field engineer will supervise technical and contractor personnel for the overall project.

A PCB certified supervisor will direct the actual PCB material handling and disposal.

WORKSCOPE:

Remove and dispose of the following transformer:

A. 200 KVA - S/N 8037220.

134 gallon = 230 kg (reconstructed)

Work on the transformer will include the following:

1. Disconnect HV and LV connections as necessary.
2. Remove the transformer.
3. Decommission and dispose of PCB liquid and transformer carcass.
4. Dispose of any other waste we generate while on-site pertaining to this portion of the work.
5. Provide disposal certificates and signed manifests to show proper disposal after completion of the job.

### CUSTOMER RESPONSIBILITIES:

1. The customer shall provide free and safe access to the job site in order to perform this work.
2. All scheduling and switching shall be the responsibility of the customer. The transformer must be out of service to perform this work.
3. It shall be the customer's responsibility to provide an uninterrupted flow of work and/or access to the equipment. If delays are incurred, their associated costs will be billed as extras.
4. The customer must provide reasonable, mutually agreeable access to each equipment and work area. This includes removal and restoration of any and all obstructions in order to provide a clear path for rigging out the transformer between the present location and the closest convenient place to locate a truck.
5. Provide the required EPA I.D. number and PCB item out of service date.

### PRICE, PAYMENT AND ESCALATION:

For the afore-mentioned scope of services we are pleased to quote you  
.....\$ 9,972.00 Lot Net.

Our terms of payment are net due upon receipt of invoice.

Title shall pass on a pro-rata basis as work is completed.

The prices quoted herein are firm for a period of thirty (30) days after which they shall be subject to adjustment.

The price quoted in this proposal is contingent upon all work being performed on a straight time basis, and all work being completed by the end of 1988.

BASIS OF PROPOSAL:

1. The terms and conditions of the attached GEISS Form 487 (CS), and the attached PCB clauses, GEISS Form 487 (PCB), shall apply unless specifically stated otherwise in this proposal.
2. These units are presently owned by Waldorf Corporation and title cannot be transferred to a "middle agent" or "distributor", etc. for resale to another ultimate user.
3. Title to the toxic waste will transfer on a per event basis at the beginning of on-site work on each particular piece of equipment .

This document contains proprietary information and is submitted upon the expressed condition that the information contained herein will not be used directly or indirectly in any way detrimental to the interest of the General Electric Company.

We thank you for allowing us to be of service, and hope to be favored with your order. I am sure you will find our PCB terms to be the best available in the industry. Should any further questions arise, please do not hesitate to contact me at this office.

Sincerely;

*Warren J Thaler*

Warren J Thaler  
Area Engineer  
ISSD - Industrial.



## ENVIROSAFE SERVICES OF IDAHO, INC.

May 24, 1989

General Electric Company

Cleveland Apparatus Service  
4477 East 49th Street

Cleveland, OH 44125

ATTENTION: Mr. Paul Bender

SUBJECT: CERTIFICATE OF DISPOSAL

<u>MANIFEST#</u>	<u>DATE RECEIVED</u>	<u>DATE DISPOSED</u>	<u>MATERIALS</u>
00905	07-05-88	07-05-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00913	07-21-88	07-22-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00943	08-08-88	08-08-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00946	08-08-88	08-10-88 <i>posted</i>	PCB D & F Transformers
00958	08-16-88	08-16-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums
00976	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums/ Drum Solids
00977	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers

Specific material as identified by the above Manifest Document Number(s), has been received and disposed of at our landfill facility located in Grand View, Idaho in accordance with contract.

If you have any questions or need additional information feel free to contact me in the Boise office at (208) 384-1500.

Sincerely,

*Ida Larson*

Ida Larson  
Accounts Receivable



GE Industry  
Sales & Services

## Certificate of Disposal

General Electric Company certifies  
that all material received from

WALDORF PAPER

described on

Manifest Number 00901 Dated JUNE 30, 1988 was  
disposed of at the following Disposal Sites:

TRANSFORMER DISPOSED AT: ENVIROSAFE SERVICES OF IDAHO  
10 1/2 MILES, NW, GRANDVIEW, IDAHO 63624  
EPA ID NUMBER: ID0073114654  
MANIFEST DOCUMENT NUMBER: 00913

Authorized Signature  
PCB FACILITY SUPERVISOR

Title  
4477 EAST 49TH STREET

Street Address  
CLEVELAND OHIO 44125

City State Zip

**DNR**  
**MICHIGAN DEPARTMENT**  
**OF NATURAL RESOURCES**

DO NOT WRITE IN THIS SPACE  
ATT. ☐ DIS. ☐ REJ. ☐ PR ☐

1979, as amended and Act 136, P.A.  
1986.  
Failure to file is punishable under  
section 299.548 MCL or Section 10 of  
Act 136, P.A. 1986.

Please print or type.

Form Approved OMB No. 2050-0029 Expires 9-30-8

**UNIFORM HAZARDOUS**  
**WASTE MANIFEST**

1. Generator's US EPA ID No.

Manifest

1. Page

Information in the shaded areas  
is not required by Federal  
law.

Generator's Name and Mailing Address

WALDORF PAPER  
177 ANGELL ST.  
BATTLECREEK, MI 49016

A. State Manifest Document Number

MI 10719839

4. Generator's Phone ( 616 ) 963-5511

B. State Generator ID

5. Transporter 1 Company Name

6. US EPA ID Number

GENERAL ELECTRIC COMPANY

080004527000

C. State Transporter ID

MI 10719839

7. Transporter 2 Company Name

8. US EPA ID Number

D. State Transporter ID

MI 10719839

9. Designated Facility Name and Site Address

10. US EPA ID Number

GENERAL ELECTRIC COMPANY  
4477 EAST 49TH STREET  
CLEVELAND, OHIO 44125

080004527000

G. State Facility ID

MI 10719839

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER).

12. Containers

13. Total Quantity

14. Unit

15. Waste

a. HAZARDOUS SUBSTANCE, LIQUID, N.O.S., ORM-E  
NA9188, RQ, (POLYCHLORINATED BIPHENYLS)

No. Type

0 0 1 C M

0 5 0 0 0

W/Vol

b.

No. Type

0 0 1 C M

0 5 0 0 0

W/Vol

c.

No. Type

0 0 1 C M

0 5 0 0 0

W/Vol

d.

No. Type

0 0 1 C M

0 5 0 0 0

W/Vol

Additional Descriptions for Materials Listed Above

TRANSFORMER WITH LIQUID (OIL)

K. Handling Codes for Waste

Listed Above

a. 1

b. 1

c. 1

d. 1

15. Special Handling Instructions and Additional Information

DIKE AND CONTAIN SPILLS. AVOID SKIN CONTACT. GE REF# 60891

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

Stephen M. Weers

Signature

Stephen M. Weers

Date

6/30/88

17. Transporter 1 Acknowledgement or Receipt of Materials

Printed/Typed Name

FRED. MONTONERO

Signature

Fred Montonero

Date

6/30/88

18. Transporter 2 Acknowledgement or Receipt of Materials

Printed/Typed Name

Signature

Date

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Signature

Date

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-4766 OR OUT OF STATE AT 617-373-7669 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-9002 24 HOURS PER DAY.



# GE Industry Sales & Services

## Supplemental Conditions for PCB Services

For PCB Services, the conditions contained herein shall supplement the CONDITIONS OF SALE, GEISS Form 487(CS):

### 1. DEFINITIONS

a. "PCB Service" shall mean the service described in the attached quotation or contract to the extent that such services involve PCB Material. PCB Service may include removal, disposal, repair, testing, clean-up, replacement of insulating fluids and all other activities (such as transportation, storage, etc.) incident thereto.

b. "PCB Material" shall mean the equipment or other material containing or contaminated with polychlorinated biphenyl (PCB) identified in the attached quotation or contract as well as all the parts and the contents thereof and all material used in the performance of the PCB Service which comes into contact with PCB Material.

c. "Release" shall mean with respect to the PCB Material the intentional or unintentional spilling, migration or escape of the PCB Material or any part thereof either alone or in connection with any other substance, including, but not limited to, water, air and smoke.

### 2. PCB MATERIAL TERMS

a. GE represents that it has knowledge of the requirements associated with the use, collection, handling, storage, transportation and disposal of the PCB Material; that it has experience in such use, collection, handling, storage, transportation and disposal; and that it shall have instructed its personnel, subcontractors and agents in the proper procedures to be used in the performance of PCB Service.

b. GE will perform the PCB Service in compliance with any and all federal, state and local laws and regulations pertaining thereto, including but not limited to, the regulations contained in 40 CFR Part 761; and will have obtained all licenses and permits required by law to engage in the activities necessary to perform the PCB Service.

c. GE warrants that storage, transportation and disposal of the PCB Material will be done by means of facilities and vehicles which are fully licensed by appropriate federal, state and local authorities, as required.

d. The Customer warrants that it has full legal title to, or the power and right to transfer title to, the PCB Material (including, without limitation, all licenses or permits required by law or regulation to be obtained by the owner and/or generator of the material), and that the Customer has no knowledge that the PCB Material is not as otherwise described in the contract documents.

e. If the Customer provides containers for transportation and/or storage of the PCB Materials, such containers shall comply with all applicable law. GE's sole remedy for the Customer's default under this paragraph is, that upon discovery of one or more non-complying containers, GE may provide complying containers and charge the Customer for the containers, the labor needed to transfer the PCB Material into complying containers, and any additional disposal charges.

f. To the extent that any PCB Material is to be disposed of, GE will take title to such PCB Material when it is loaded on a transport vehicle provided by GE or when the PCB Material is delivered to a GE facility, whichever is earlier. If GE and Customer have agreed in writing that title will pass at an earlier time, such agreement will govern. GE takes title to the PCB Material only for the purpose of disposal and shall not

use or transfer title to the PCB Material for any other purpose. In the event that the PCB Material is later determined to be of a nature or character different from that described in the contract documents, title shall pass back to the Customer and, unless otherwise agreed, GE may return the PCB Material to the Customer at the Customer's expense and the Customer shall be liable for and shall indemnify GE against all losses, damages and claims caused by the PCB material including any damage to the environment, except to the extent that such losses, damages or claims are the result of the negligent or other illegal act or omission of GE or its subcontractors.

g. Unless the Customer has otherwise advised GE in writing before commencement of the PCB Service, the Customer represents that any of the PCB material which is to be disposed of has not been in storage for disposal or out of service prior to the start of work. The Customer shall indemnify GE against all loss, cost and liability, including fines, penalties, attorneys' fees and costs of defense and extra costs of disposal, on account of any failure of GE to cause the disposal of any PCB material prior to one year after the PCB Material first went into storage for disposal because of reliance on the representation described in the preceding sentence or on any false or mistaken representation by the Customer concerning the date when the PCB material first went into storage for disposal.

h. Unless otherwise agreed or required by law, GE will not test the PCB Material to determine the level of PCB concentration without the prior consent of the Customer. Unless there is a determination of PCB concentration made or accepted by GE:

- (1) GE may charge the disposal price for PCB Material of the highest concentration;
- (2) GE may use special procedures to prevent contamination of its facilities and equipment and make an appropriate extra charge for such service; and
- (3) GE shall not be liable to the Customer for any level of PCB concentration revealed by a subsequent test.

i. The following rules apply in the case of any replacement of insulating fluid for the purpose of reclassifying any equipment under 40CFR 761.30(a)(2)(iv), (b)(2)(vii) or (h)(2)(iv):

- (1) Unless otherwise agreed, the Customer shall be responsible for operating the equipment as required by regulation or otherwise during a 90-day in-service period.
- (2) GE will test to determine the level of PCB concentration prior to fluid replacement and will make a compliance retest after the 90-day in-service period.
- (3) GE guarantees that the PCB concentration shown by a compliance retest will not exceed the concentration level stated in the contract documents, or, if no level is stated, then, that the PCB concentration will be such that the equipment will be reclassified to the next lower class. The Customer's sole remedy for a breach of this guarantee is that GE will reperform the service to achieve the results guaranteed. GE shall not be responsible for any increase in PCB concentration shown by testing after a successful compliance retest.

j. Subject to the provisions of paragraph 2.k. below, in the event of the failure by GE, its employees, agents and subcontractors to comply with any applicable federal, state or municipal law, regulation or rule which directly or indirectly regulates or affects the use, collection, handling, storage, transportation or disposal of the PCB Material; or the release of all or any part of the PCB material prior to the completion of the

(Continued on reverse)



# GE Industry Sales & Services

## Conditions of Sale for Services

The sale of any service and incidental goods ordered by the Customer is expressly conditioned upon the terms and conditions contained or referred to herein. Any additional or different terms and conditions set forth in the Customer's purchase order or similar communication are objected to and will not be binding upon GE Industry Sales & Services (herein called GE) unless specifically assented to in writing by GE's authorized representative. Authorization by the Customer, whether written or oral, to furnish services and incidental goods will constitute acceptance of these terms and conditions.

### 1. SERVICE DEFINITIONS

a. **COMPLETE INSTALLATION/MAINTENANCE/CONSTRUCTION** is any combination of planning, management, labor, tools and incidental goods to move, install, assemble, modify, repair, modernize, start-up and/or maintain equipment.

b. **FIELD ENGINEERING** is engineering and technical guidance, advice and counsel based upon GE's current engineering, manufacturing, installation and operating practices, as related to work performed by others.

c. **JOB MANAGEMENT** is any combination of planning, scheduling, monitoring, selection of crews, as specified in the contract documents, but does not include responsibility for supervision of labor or for the quality or acts of craft labor.

d. **TRAINING** is an instructional course prepared and provided by personnel proficient in the subject matter.

e. **ENGINEERING STUDY/INSPECTION/TEST** is system design and analysis of equipment or systems by competent, experienced personnel using special techniques, instruments or devices with the objective of reporting opinions or recommendations relating to the current condition and future serviceability of the equipment or system.

f. **PCB SERVICE** is any combination of relocation, testing, containment, retrofit/refill or retrofit/replacement of PCB material.

### 2. WARRANTY

a. GE warrants to the Customer that goods and services sold will be free from defects in material and workmanship and will conform to any mutually agreed upon specifications. If any failure to meet this warranty appears within one year from the date of shipment of the goods or completion of the services, on the condition that GE be promptly notified in writing thereof, GE will correct any such failure by reperforming any defective portion of the services furnished and supplying conforming goods. If the contract covers complete installation, maintenance or construction, GE will correct the failure by reperforming any defective service, and either repairing or replacing (at its option) any defective goods furnished and any damage to the equipment upon which the service was performed resulting from defective service. If reperformance is not practicable, GE will furnish without charge services in an amount essentially equal to those which, in GE's sole judgement, would have been required for reperformance. If the contract covers job management, GE's sole obligation will be to replace the job manager for the balance of the job. If the contract covers training, GE's sole obligation will be to replace the assigned instructor and reperform the training.

b. The preceding paragraph a. sets forth the exclusive remedy for all claims based on failure of, or defect in, goods or services sold hereunder, whether the failure or defect arises before or during the warranty period, and whether a claim, however instituted, is based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise. The foregoing warranty is exclusive and is in lieu of all other warranties whether written, oral, implied or statutory. **AS TO ALL GOODS SOLD, NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PARTICULAR PURPOSE SHALL APPLY.**

### 3. PATENTS

a. GE warrants that the goods sold hereunder, and any part thereof, shall be delivered free of any rightful claim of any third party for infringement of any United States patent. If notified promptly in writing and given authority, information and assistance, GE shall defend, or may settle, at its expense, any suit or proceeding against the Customer based on a claimed infringement which would result in a breach of this warranty, and GE shall pay all damages and costs awarded therein against the Customer due to such breach. In case any goods are in such suit held to constitute such an infringement and the use for the purpose intended of said goods is enjoined, GE shall, at its expense and option, either procure for the Customer the right to continue using said goods, or replace same with noninfringing goods, or modify same so they become noninfringing, or remove the goods and refund the purchase price (less reasonable depreciation for any period of use) and any transportation costs separately paid by the Customer. The foregoing states the entire liability of GE for patent infringement.

b. The preceding paragraph a. shall not apply to any goods specified by the Customer and not of GE manufacture, or manufactured to the Customer's design, or to the use of any goods furnished hereunder in conjunction with any other goods in a combination not furnished by GE as a part of the transaction. As to any such goods, or use in such combination, GE assumes no liability whatsoever for patent infringement and the Customer will hold GE harmless against any infringement claim arising therefrom.

### 4. EXCUSABLE DELAYS

a. GE shall not be liable for delay due to: (1) causes beyond its reasonable control, or (2) acts of God, acts of the Customer, prerequisite work by others, acts of civil or military authority, government priorities, fires, strikes or other labor disturbances, floods, epidemics, war, riot, delays in transportation or car shortages, or (3) inability to obtain or delay in obtaining, due to causes beyond its reasonable control, suitable labor, materials, or facilities. In the event of any such delay, the time of performance shall be extended for a period equal to the time lost by reason of the delay.

b. In the event GE is delayed by acts of the Customer or by prerequisite work by other contractors or suppliers of the Customer, GE shall be entitled to an equitable price adjustment in addition to extension of the time of performance.

### 5. SALES AND SIMILAR TAXES

In addition to the price specified herein, the Customer shall pay, or reimburse GE for, the gross amount of any present or future sales, use, excise, value-added or other similar tax applicable to the price, sale or furnishing of any services or goods hereunder, or to their use by GE or the Customer, or the Customer shall provide GE with evidence of exemption acceptable to the taxing authorities.

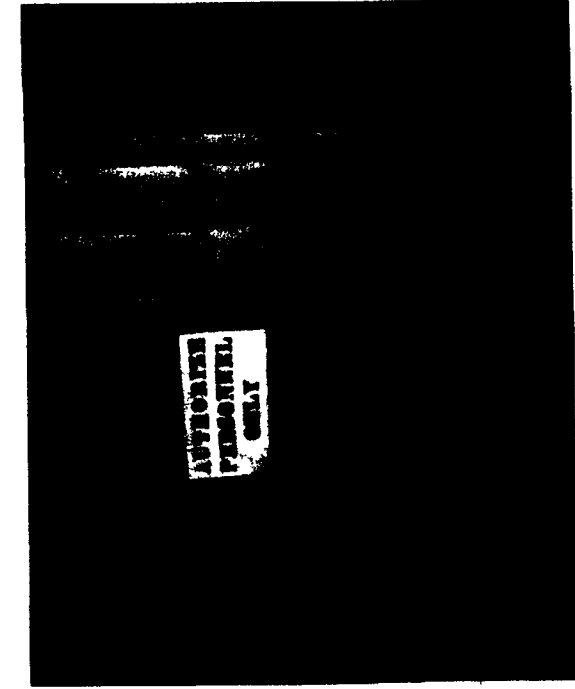
### 6. PAYMENTS AND FINANCIAL CONDITION

a. Pro rata payments shall become due as shipments are made or as work is completed. If GE consents to delayed shipments of goods, payment shall become due on the date when GE is prepared to make shipment. All payments shall be made without set-off for claims arising out of other sales by GE.

b. If the financial condition of the Customer at any time does not, in the judgment of GE, justify continued performance on the terms of payment previously agreed upon, GE may require full or partial payment in advance or shall be entitled to terminate the contract and receive

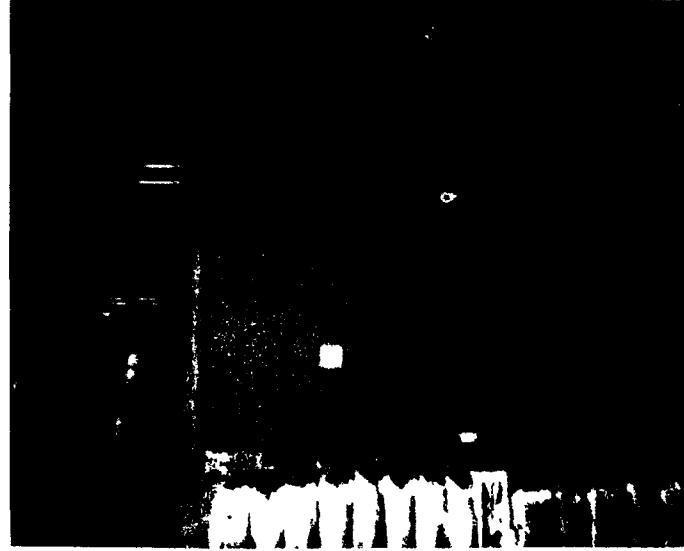
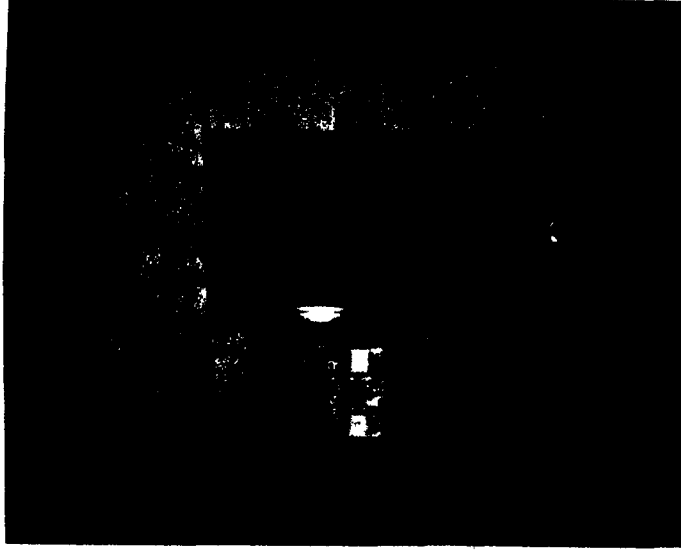
Photographs

WALDORF CORPORATION  
BATTLE CREEK, MICHIGAN  
TRANSFORMER SUBSTATIONS

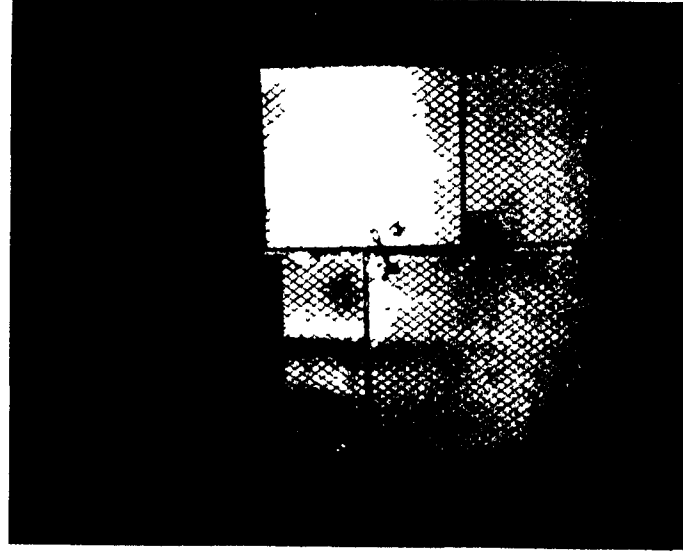


#2  
SUB

#1 - S4B



#2  
S4B



#3  
S4B

# DORSEY & WHITNEY

A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

350 PARK AVENUE  
NEW YORK, NEW YORK 10022  
(212) 415-9200

1330 CONNECTICUT AVENUE, N. W.  
WASHINGTON, D. C. 20006  
(202) 857-0700

3 GRACECHURCH STREET  
LONDON EC3V 0AT, ENGLAND  
01-929-3334

36, RUE TRONCHET  
75009 PARIS, FRANCE  
01-42-66-59-49

FAR EAST FINANCE CENTER  
HONG KONG  
852-5-8612555

2200 FIRST BANK PLACE EAST  
MINNEAPOLIS, MINNESOTA 55402  
(612) 340-2600

TELEX 29-0605  
FAX (612) 340-2868

MARK R. KASTER  
(612) 340-7815

January 17, 1990

340 FIRST NATIONAL BANK BUILDING  
ROCHESTER, MINNESOTA 55908  
(507) 286-3156

315 FIRST NATIONAL BANK BUILDING  
WATZATA, MINNESOTA 55391  
(612) 475-0373

1200 FIRST INTERSTATE CENTER  
BILLINGS, MONTANA 59103  
(406) 252-3800

204 DAVIDSON BUILDING  
GREAT FALLS, MONTANA 59401  
(406) 797-3632

127 EAST FRONT STREET  
MISSOULA, MONTANA 59802  
(406) 721-6083

Mr. Donald Opala  
Waldorf Corporation  
177 Angell Street  
Battle Creek, Michigan 49016

CONFIDENTIAL  
ATTORNEY-CLIENT COMMUNICATION

Re: EPA Complaint Regarding PCBs

Dear Don:

I have reviewed the PCB reports and documentation from the Battle Creek facility. There is certain data which is missing from the documents. These include monthly inventory records and PCB annual reports for 1985 and 1986. The federal PCB regulations require regular monitoring of PCB transformers as well as the preparation of an annual summary report which details the storage, use and disposal of PCBs at the Waldorf facility. The EPA has requested that Waldorf reconstruct the data to the extent it wasn't documented during the relevant periods. I will confer further with the EPA and let you know how this issue is resolved.

I have also reviewed your PCB inspection reports prepared for March-May 1988. These reports indicated a possible PCB leak or spill for the power house transformer. You confirmed, however, that the reference to leaks and spills was indicative of "moisture" and not the leaking or spilling of PCB fluid. It is my understanding that Transformer Consultants was called upon to repair the transformer during this period. I will so indicate this on a reconstructed record.

Thank you for your assistance in this matter.

Very truly yours,



Mark R. Kaster

MRK/aj

cc: Mr. Les Spurgeon  
Mr. Jack Greenshields/  
Mr. Gary Kaziukewicz ✓

# DORSEY & WHITNEY

A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

350 PARK AVENUE  
NEW YORK, NEW YORK 10022  
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1900 CONNECTICUT AVENUE, N. W.  
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FAR EAST FINANCE CENTER  
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315 FIRST NATIONAL BANK BUILDING  
WAYZATA, MINNESOTA 55391  
(612) 475-0373

1200 FIRST INTERSTATE CENTER  
BILLINGS, MONTANA 59103  
(406) 252-3600

201 DAVIDSON BUILDING  
GREAT FALLS, MONTANA 59401  
(406) 727-0632

127 EAST FRONT STREET  
MISSOULA, MONTANA 59802  
(406) 721-6025

January 19, 1990

Jennifer Costanza, Esq.  
Assistant Regional Counsel  
Office of Regional Counsel 5CA-TUB-3  
United States Environmental  
Protection Agency  
Region V  
230 South Dearborn Street  
Chicago, Illinois 60604

Dear Ms. Costanza:

The purpose of this letter is to confirm our next settlement conference scheduled for 10:00 a.m. on February 13, 1990. I will be out of the office until the end of January. I will, however, respond to your further inquiries and questions during the first week of February.

Thank you.

Very truly yours,



Mark R. Kaster

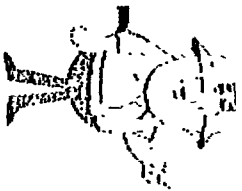
MRK/aj

cc: Mr. Terence Bonace  
Mr. Les Spurgeon  
Mr. Don Opala

bcc: Mr. Jack Greenshields  
Mr. Gary Kaziukewicz ✓

Post-It™ brand fax transmittal memo 7671		# of pages >
To	Gary Kay	From
Ca	Waldorf	Ca
Dept.		Phone #
Fax #		Fax #
		616 963 5564

28 pages



Acts 4:12

**DIVISION OF  
EDMETS**

**TRANSFORMER  
CONSULTANTS**

P.O. BOX 724, ABERN, OH 44310

Phone: (216) 833-2  
Toll Free: (800) 321

### TEST POWER REPORT

DATE: 4/13/88

WALDORF CORPORATION

BATTLE CREEK MI

4/13/88

#### \* SUMMARY OF RESULTS \*

TOTAL GALLONS OF LUBRICANT	750
TOTAL UNITS REPAIRS	1
TOTAL UNITS STOP TEST	0
TOTAL UNITS CORRECTION	1
TOTAL UNITS STOP	0
TOTAL REPAIRS STOP TEST	0
TOTAL REPAIRS SERVICE	1
TOTAL RMA	1350
ESTIMATED VALUE OF UNITS	\$2,100.00

The national average cost of annual transformer maintenance is  
a part of transformer investment. (ENR, JOURNAL, March, 1983). Based  
on 13 units serviced, value of units, average annual maintenance  
for these units would be \$1,350.00

In view of our transformer testing services, if you did not receive a quotation with  
this report, please call our ABERN office for a comprehensive study and proposal  
of your transformer problems.

002

WALDORF BC

8616 963 5584

07:41

12/20/88

12-1



Acts 4:12

**DIVISION OF  
EDMVERS****TRANSFORMER  
CONSULTANTS**

P.O. BOX 4724, KRON, OH 44310

Phone: (216) 621-1111  
Toll Free: (800) 441-1111

## TEST SURVEY RECAP

CUST# 00130000

WALDORF CORPORATION

BATTLE CREEK MI

4/19/88

TOP	SUBSTATION NAME	SIZE KVA	GALLONS LIQUID TYPE	PCB CLASS	PCB DATE	LET GC KF TOP PF	SERVICE PRODUCT
3	CONVEYER ANGELL FLT	300	209 ASHAREL	PCB		AC AC	ACCEPTABLE DATA-PC
7	POWER HOUSE	700	500 ASHAREL	PCB		AC AC	REPAIR/PAINT: SEE
12			50 OIL	NON-PCB	8/30/88		ACCEPTABLE DATA-PC
13			50 OIL	NON-PCB	8/30/88		ACCEPTABLE DATA-PC
14			50 OIL	NON-PCB	8/30/88		ACCEPTABLE DATA-PC
15			50 OIL	NON-PCB	8/30/88		ACCEPTABLE DATA-PC



Acts 4:12

**DIVISION OF  
EDMUNDSON**

**TRANSFORMER  
CONSULTANTS**

Phone: (216) 633  
Toll Free: (800) 3

May 23, 1988

Mr. Steve Weers  
Waldorf Corp.  
177 Angell St.  
Battle Creek, MI. 49016

REF: 06194

Gentlemen:

Enclosed are the results of the transformer oils recently tested by our personnel.

Please refer to the section of the test data master sheet for the specific type of tests performed on your oil.

Normal servicing of units that contain PCB's in excess of 50 PPM is restricted by Federal Law. We can, however, lower the PCB concentration to acceptable limits. If you wish to discuss the options available please feel free to contact us.

Should you require further work on some of your transformers, a formal quotation will be forwarded per your request.

If you have any questions on this or any related matter, do not hesitate to contact our Tallmadge, Ohio office (216/633-2666).

Very truly yours,

CRAIG SCHLEY  
REGIONAL SALES

CS/jm

## NAMEPLATE DATA

MFG G.E.	EQUIP TYPE	TRANSFORMER
DATE MFG	TRANS CLASS	0A
S/N 8037218	IMPEDANCE	4.90%
KVA 300	PHASE/CYCLE	3/60
PHI 2.400	LIQUID TYPE	ASKAREL
SEC 203	GAL LIQUID	209

## ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATORS	NO
FANS	NO	LTC COMP	NO
H <sub>2</sub> O COOLED	NO	BUSHING LOC	51
OIL PUMPS	NO	HOSE LENGTH	20
TOP FPV	1.00 IN	DE-ENERGIZED	
BOTTOM FPV	1.00 IN	POWER V/A	24
OTHER ACCESS			

## VISUAL INSPECTION

PAINT CONDITION	GOOD	LEAKS	NONE
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## PCB CONTENT / EXPRESSED IN PP'

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER
-----------------	--------------	--------------	--------------	-------

## FIELD SERVICE

COLOR LABEL

CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL
5/00/76					.025 AC	N/A	46 AC	WTR WHITE AC	1.540 AC	CLEAR AC
11/00/79					.030 AC	N/A	33 AC	WTR WHITE AC	1.540 AC	CLEAR AC
12/19/83		NORMAL	30 C		.030 AC	N/A		WTR WHITE AC	1.540 AC	CLEAR AC
1/07/85		LOW	30 C		.020 AC	N/A		WTR WHITE AC	1.520 AC	CLEAR AC
3/26/87		LOW	40 C		.020 AC	N/A	34 AC	WTR WHITE AC	1.540 AC	CLEAR AC
2/10/88		LOW	29 C		.015 AC	N/A	38 AC	PALE YELD AC	1.540 AC	CLOUDY QU
3/30/83		LOW	34 C		.020 AC	N/A	46 AC	PALE YELD AC	1.520 AC	CLEAR AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACEYLENE	TOTAL COMBUSTIBLE	TOT G
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

ID #

MFG G.E.

KVA

300

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL PLT

UNIT #

S/N 8037212

SECONDARY

200

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83		25E	20.73	N/A		
1/07/85		25E	19.15	N/A		
3/26/87			16.70	N/A		
2/10/88		25E	11.50	N/A		
6/30/88		25E	16.50	N/A		

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM
------	---------	----------	------	------	--------	------	--------	-----	------------

\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
\* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

CITY

BATTLE CREEK MI

ID # 36125000

DATE PRINTED

SUB NAME POWER HOUSE

UNIT #

ANGELL PLANT

OTHER

LOCATION

INDOOR /GROUND

## NAMEPLATE DATA

MFG G.E.  
 DATE MFG  
 S/N 8113528  
 KVA 750  
 PRI 2,400  
 SEC 480

EQUIP TYPE  
 TRANS CLASS  
 IMPEDANCE  
 PHASE/CYCLE  
 LIQUID TYPE  
 GAL LIQUID

TRANSFORMER  
 OA  
 5.89%  
 3/40  
 ASKAREL  
 380

## ADDITIONAL EQUIPMENT

RADIATORS YES CONSERVATORS NO  
 FANS NO LTC COMP NO  
 H<sub>2</sub>O COOLED NO BUSHING LOC 510  
 OIL PUMPS NO HOSE LENGTH 200  
 TOP FPV 1.00 IN DE-ENERGIZED  
 BOTTOM FPV 1.00 IN POWER V/A 240  
 OTHER ACCESS

## VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS YES/BTH GATE VALVE

## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE 1242 1254 1260 OTHER  
 ARACLOAR ARACLOAR ARACLOAR

## FIELD SERVICE

7/85 UTILITY

COLOR LABEL

CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP	GR	VISUAL
5/20/73					080 AC	N/A	88 AC	WTR WHITE AC	1.340 AC		CLEAR AC
11/20/73					085 AC	N/A	89 AC	WTR WHITE AC	1.340 AC		CLEAR AC
12/18/83		NORMAL	43 C		040 AC	N/A		PALE YELD AC	1.340 AC		CLEAR AC
1/17/85		LOW	50 C		040 AC	N/A		PALE YELD AC	1.340 AC		CLEAR AC
3/23/87		NORMAL	45 C		033 AC	N/A	88 AC	PALE YELD AC	1.340 AC		CLEAR AC
2/10/88		NORMAL	50 C		015 AC	N/A	42 AC	PALE YELD AC	1.360 AC		CLOUDY SU
8/30/88		NORMAL	45 C		085 AC	N/A	41 AC	PALE YELD AC	1.320 AC		CLEAR AC

DO-RENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOT- CAC
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG 12

KVA

750

PRIMARY

2,400

SUB NAME POWER HOUSE

UNIT #

ID # 86

ANGELL D-1

S/N 3119522

SECONDARY

450

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PERCENT MOISTURE/DRY WEIGHT	PERCENT MOISTURE SATURATION	STATUS
12-17-88		150	52.07	N/A		
12-17-88		150	47.20	N/A		
12-17-88		150	47.40	N/A		
12-17-88		150	23.10	N/A		
12-17-88		150	37.00	N/A		

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM
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\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
 \* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

NAMEPLATE DATA				ADDITIONAL EQUIPMENT		
MFG. S.E.	EQUIP. TYPE	TRANSFORMER	RADIATORS	YES	CONSERVATORS	N
DATE MFG.	TRANS CLASS	0A	FANS	NO	LTC COMP	NO
S/N 8113527	IMPEDANCE	5.65%	H <sub>2</sub> O COOLED	NO	BUSHING LOC	SC
KVA 1,000	PHASE/CYCLE	3/30	OIL PUMPS	NO	HOSE LENGTH	20
PRI 2,300	LIQUID TYPE	ASKAREL	TOP FV	1.00 IN	DE-ENERGIZED	
SEC 450	GAL LIQUID	454	BOTTOM FV	1.00 IN	POWER V/A	24
OTHER ACCESS						

VISUAL INSPECTION				PCB CONTENT / EXPRESSED IN PP				
PAINT CONDITION	GOOD	LEAKS	NONE	DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER
FIELD SERVICE				COLOR LABEL CLASS				

LIQUID SCREEN TEST DATA											
DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	
3/03/76					.050 AC	N/A	39 AC	WTR WHITE AC	1.340 AC	CLEAR	AC
11/00/79					.010 AC	N/A	33 AC	WTR WHITE AC	1.340 AC	CLEAR	AC
08/19/85		NORMAL	55 C		.055 AC	N/A		WTR WHITE AC	1.320 AC	CLOUDY	QU
1/07/85		LOW	50 C		.010 AC	N/A		WTR WHITE AC	1.320 AC	CLOUDY	QU
6/25/87		NORMAL	50 C		.010 AC	N/A	33 AC	WTR WHITE AC	1.340 AC	CLOUDY	QU
2.10/88		NORMAL	40 C		.015 AC	N/A	36 AC	PALE YELC AC	1.350 AC	CLOUDY	QU

COMMENTS FREE WATER AND/OR CLOUDY OIL INDICATES MOISTURE.

GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM												
DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
Same as 8113530 1 of 4												

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB. NAME CONVEYOR ANGELL PLT UNIT # OTHER

ID # 36123000 DATE PRINTED 3/01/88  
LOCATION INDOOR / GROUND

### NAMEPLATE DATA

MFG. G.E.  
DATE MFG.  
S/N 8113330  
KVA 1,000  
PRI 2,400  
SEC 480  
EQUIP. TYPE  
TRANS CLASS  
IMPEDANCE  
PHASE/CYCLE  
LIQUID TYPE  
GAL LIQUID  
TRANSFORMER  
GA 4T1 RA  
5.63%  
3/50  
ASKAREL  
434  
55° rise

### ADDITIONAL EQUIPMENT

RADIATORS YES  
FANS NO  
H2O COOLED NO  
OIL PUMPS NO  
TOP FPV 1.30 IN  
BOTTOM FPV 1.00 IN  
OTHER ACCESS  
CONSERVATORS NG  
LTC COMP NG  
BUSHING LOC SIDE ENCLOSED  
HOSE LENGTH 200 FEET  
DE-ENERGIZED  
POWER V/A 240/48

### VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS YES/TFPV

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE 1242 AROCLOR 1254 AROCLOR 1250 AROCLOR OTHER TOTAL CONTENT

### FIELD SERVICE

COLOR LABEL CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
5/90/76					.045 AC	N/A	41 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/83/77					.045 AC	N/A	40 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/17/86	LOW	40 C			.070 AC	N/A		WTR WHITE AC	1.530 AC	CLEAR AC	NONE AC
1/67/85	NOT TESTED PER CUSTOMER REQUEST										
3/23/87	LOW	90 C			.040 AC	N/A	36 AC	PALE YELG AC	1.540 AC	CLEAR AC	NONE AC
2/10/88	LOW	29 C			.018 AC	N/A	38 AC	PALE YELG AC	1.560 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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Total WT. 4200  
H2 X  
H3 X  
2400  
2340  
2280  
8 ft. H  
53 D  
60 W

1 of 4

Bolted tops

KEY TO ABBREVIATIONS: AC - ACCEPTABLE QU - QUESTIONABLE UN - UNACCEPTABLE

CUST. WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB. NAME CONVEYOR ANGELL PLT UNIT # OTHER

ID # 36125000 DATE PRINTED  
LOCATION INDOOR /GROUND

### NAMEPLATE DATA

MFG. WEST  
DATE MFG.  
S/N YDR4085 7626594  
KVA 1,000  
PRI 2,400  
SEC 480  
EQUIP. TYPE  
TRANS CLASS  
IMPEDANCE  
PHASE/CYCLE  
LIQUID TYPE  
GAL LIQUID

TRANSFORMER  
QA  
3.60%  
3/60  
ASKAREL  
240

65° rise

### ADDITIONAL EQUIPMENT

RADIATORS YES  
PANS NO  
H<sub>2</sub>O COOLED NO  
OIL PUMPS NO  
TOP FPV 1.00 IN  
BOTTOM FPV 1.00 IN  
OTHER ACCESS  
CONSERVATORS NO  
LTC COMP NO  
BUSHING LOC SIDE  
HOSE LENGTH 200  
DE-ENERGIZED NO  
POWER VIA 240.

### VISUAL INSPECTION

PAINT CONDITION FAIR  
LEAKS YES/RIGHT TOP CORNER

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE  
1242 AROCLOR  
1254 AROCLOR  
1260 AROCLOR  
OTHER

### FIELD SERVICE

COLOR LABEL  
CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	S
3/06/76					.020 AC	N/A	42 AC	WTR WHITE AC	1.340 AC	CLEAR AC	1
11/06/79			0 C	0.0	.020 AC	N/A	34 AC	WTR WHITE AC	1.340 AC	CLEAR AC	1
12/19/83		NORMAL	38 C	0.2	.010 AC	N/A		WTR WHITE AC	1.360 AC	CLEAR AC	1
1/07/85		LOW	30 C		.015 AC	N/A		PALE YELG AC	1.320 AC	CLEAR AC	1
5/26/87		NORMAL	40 C	0.2	.010 AC	N/A	57 AC	PALE YELG AC	1.340 AC	CLEAR AC	1
2/10/88		NORMAL	21 C	0.0	.020 AC	N/A	46 AC	PALE YELG AC	1.340 AC	CLEAR AC	1

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOT. GAS
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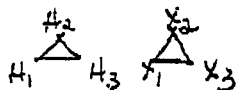
53 W

65 H

76 ~~W~~ D

Total Wt. 8900

BIL 45/30



1 of 4

Welded top

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB. NAME CONVEYOR ANGELL PLT UNIT #

OTHER

ID # 56125000 DATE PRINTED  
LOCATION INDOOR / GROUND

### NAMEPLATE DATA

MFG. G.E. EQUIP. TYPE TRANSFORMER  
DATE MFG. TRANS CLASS QA  
S/N 8037213 IMPEDANCE 4.90%  
KVA 300 PHASE/CYCLE 3/480  
PRI 2,400 LIQUID TYPE ASKAREL  
SEC 200 GAL LIQUID 209

*H<sub>1</sub> R<sub>1</sub>  
55° rise*

### ADDITIONAL EQUIPMENT

RADIATORS YES CONSERVATORS NO  
FANS NO LTC COMP NO  
H<sub>2</sub>O COOLED NO BUSHING LOC 30  
OIL PUMPS NO MOSE LENGTH 20  
TOP PPV 1.00 IN DE-ENERGIZED  
BOTTOM PPV 1.00 IN POWER VIA 30  
OTHER ACCESS

### VISUAL INSPECTION

PAINT CONDITION 2000 LEAKS NONE

### PCB CONTENT / EXPRESSED IN PP

DATE OF SERVICE 1242 1254 1260  
AROCLOR AROCLOR AROCLOR OTHER

### FIELD SERVICE

COLOR LABEL

CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL
3/03/76					.025 AC	N/A	46 AC	WTR WHITE AC	1.540 AC	CLEAR AC
11/08/79					.030 AC	N/A	38 AC	WTR WHITE AC	1.540 AC	CLEAR AC
12/19/86		NORMAL	30 C		.030 AC	N/A		WTR WHITE AC	1.540 AC	CLEAR AC
1/07/85		LOW	30 C		.025 AC	N/A		WTR WHITE AC	1.520 AC	CLEAR AC
8/22/87		LOW	40 C		.020 AC	N/A	34 AC	WTR WHITE AC	1.540 AC	CLEAR AC
2/10/86		LOW	29 C		.015 AC	N/A	38 AC	PALE YELD AC	1.540 AC	CLOUDY QU

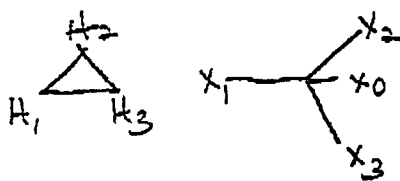
COMMENTS FREE WATER AND/OR CLOUDY OIL INDICATES MOISTURE.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TO
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*Belted top  
7200 Total Wt.*

*48 W  
42 ~~W~~ D  
67 H*



*1 of 4*

KEY TO ABBREVIATIONS: AC - ACCEPTABLE QU - QUESTIONABLE UN - UNACCEPTABLE

CUST. WALDORF CORPORATION  
SUB. NAME POWER HOUSE

CITY BATTLE CREEK MI  
UNIT # ANGELL PLANT OTHER

ID # 36125000 DATE PRINTED  
LOCATION INDOOR /GROUND

### NAMEPLATE DATA

MFG. S.E.  
DATE MFG.  
S/N 8119325  
KVA 750  
PRI 2,400  
SEC 480  
EQUIP. TYPE TRANSFORMER  
TRANS CLASS 5A  
IMPEDANCE 5.65%  
PHASE/CYCLE 3/60  
LIQUID TYPE ASKAREL  
GAL LIQUID 380

HTI  
RA  
55° rise

### ADDITIONAL EQUIPMENT

RADIATORS YES  
FANS NO  
H<sub>2</sub>O COOLED NO  
OIL PUMPS NO  
TOP FPV 1.00 IN  
BOTTOM FPV 1.00 IN  
OTHER ACCESS  
CONSERVATORS  
LTC COMP  
BUSHING LOC  
HOSE LENGTH  
DE-ENERGIZED  
POWER VIA

### VISUAL INSPECTION

PAINT CONDITION GOOD  
LEAKS YES/5TH DATE VALVE

### PCB CONTENT / EXPRESSED IN P

DATE OF SERVICE 1242 AROCLOR 1254 AROCLOR 1280 AROCLOR CTFE

### FIELD SERVICE

7/55 UTILITY

COLOR LABEL CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL
3/66/76					.050 AC	N/A	59 AC	WTR WHITE AC	1.540 AC	CLEAR AC
11/66/76					.035 AC	N/A	57 AC	WTR WHITE AC	1.540 AC	CLEAR AC
12/19/83		NORMAL	48 C		.040 AC	N/A		PALE YELD AC	1.540 AC	CLEAR AC
1/07/85		LOW	50 C		.040 AC	N/A		PALE YELD AC	1.540 AC	CLEAR AC
5/26/87		NORMAL	43 C		.035 AC	N/A	58 AC	PALE YELD AC	1.540 AC	CLEAR AC
2/10/88		NORMAL	30 C		.015 AC	N/A	42 AC	PALE YELD AC	1.560 AC	CLOUDY EU

CONTENTS FREE WATER AND/OR CLOUDY OIL INDICATES MOISTURE.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE SERVICE HYDROGEN OXYGEN NITROGEN METHANE CARBON MONOXIDE CARBON DIOXIDE ETHANE ETHYLENE ACETYLENE TOTAL COMBUSTIBLE

H<sub>1</sub> H<sub>2</sub> H<sub>3</sub> X<sub>1</sub> X<sub>2</sub> X<sub>3</sub>

2200 Total Wt.  
TH/TH

1 of 1

2520  
2460  
2400  
2340  
2280

Bolted top

54 W  
88 H  
51 D

KEY TO ABBREVIATIONS: AC - ACCEPTABLE QU - QUESTIONABLE UN - UNACCEPTABLE

CUST. WALDORF CORPORATION CITY BATTLE CREEK MI  
SUB NAME RIVER SUB ANGELL PLT UNIT # LOW LEFT OTHER

ID # 36125000 DATE PRINTED 3  
LOCATION INDOOR /GROUND

### NAMEPLATE DATA

MFG. G.E. EQUIP. TYPE TRANSFORMER  
DATE MFG. TRANS CLASS 3A  
S/N 5037820 IMPEDANCE 4.70%  
KVA 200 PHASE/CYCLE 3/60  
PRI 2,400 LIQUID TYPE ASKAREL  
SEC 460 GAL LIQUID 134

### ADDITIONAL EQUIPMENT

RADIATORS YES CONSERVATORS NO  
FANS NO LTC COMP NO  
W/O COOLED NO BUSHING LDC 5000  
OIL PUMPS NO HOSE LENGTH 40  
TOP FPV 1.00 IN DE-ENERGIZED  
BOTTOM FPV 1.00 IN POWER V/A 240  
OTHER ACCESS

### VISUAL INSPECTION

PAINT CONDITION 5000 LEAKS YES/5FPV & TSV

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE 1242 1254 1260  
AROCLOR AROCLOR AROCLOR OTHER

### FIELD SERVICE

COLOR LABEL CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP	GR	VISUAL	S-
3/09/76					.030 AC	N/A	43 AC	WTR WHITE AC	1.540	AC	CLEAR AC	AC
11/00/79					.030 AC	N/A	39 AC	WTR WHITE AC	1.540	AC	CLEAR AC	AC
12/19/83		NORMAL			.070 AC	N/A		WTR WHITE AC	1.540	AC	CLOUDY QU	AC
1/07/83		LOW	25 C		.035 AC	N/A		PALE YELC AC	1.540	AC	CLOUDY QU	AC
3/26/87		LOW			.020 AC	N/A	37 AC	PALE YELC AC	1.540	AC	CLEAR AC	AC
2/10/88		LOW			.013 AC	N/A	56 AC	PALE YELC AC	1.540	AC	CLEAR AC	AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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BEING REMOVED  
QUOTE REMOVAL COST

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

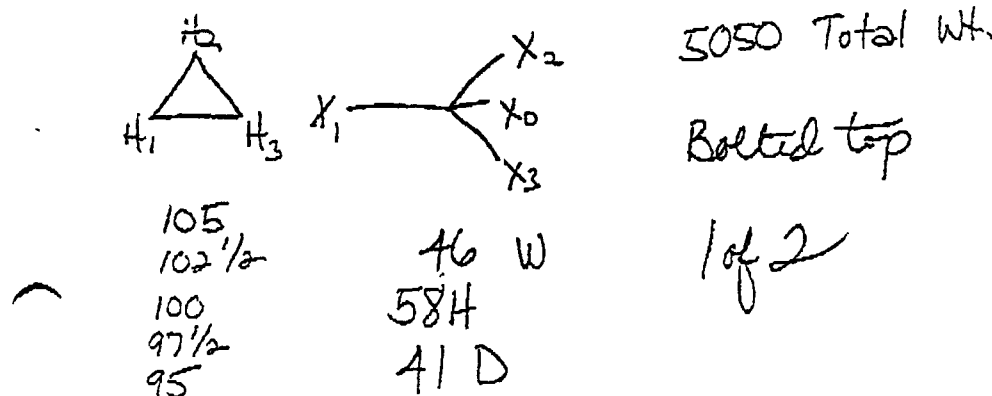
NAMEPLATE DATA				ADDITIONAL EQUIPMENT			
MFG. G.E.	EQUIP. TYPE	TRANSFORMER	HTI RA	RADIATORS	YES	CONSERVATORS	NO
DATE MFG.	TRANS CLASS	CA		FANS	NO	LTC COMP	NO
S/N 8037219	IMPEDANCE	4.65%	35°	H <sub>2</sub> O COOLED	NO	BUSHING LOC	5200
KVA 200	PHASE/CYCLE	3/60		OIL PUMPS	NO	HOSE LENGTH	200
PRV 2,400	LIQUID TYPE	ASKAREL		TOP PPV	1.00 IN	DE-ENERGIZED	
SEC 200	GAL LIQUID	113		BOTTOM PPV	1.00 IN	POWER V/A	240
				OTHER ACCESS			

VISUAL INSPECTION				PCB CONTENT / EXPRESSED IN PPM			
PAINT CONDITION	FAIR	LEAKS	NONE	DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR OTHER
FIELD SERVICE				COLOR LABEL CLASS			

LIQUID SCREEN TEST DATA												
DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP	GR	VISUAL	S
3/06/76					330 AC	N/A	88 AC	WTR WHITE AC	1.540	AC	CLEAR AC	AC
11/02/79					380 AC	N/A	85 AC	WTR WHITE AC	1.540	AC	CLEAR AC	AC
12.19/82	NORMAL				320 AC	N/A		WTR WHITE AC	1.540	AC	CLEAR AC	AC
1/07/85	NORMAL	100			340 AC	N/A		PALE YELD AC	1.540	AC	CLEAR AC	AC
6/26/87	NORMAL				380 AC	N/A	82 AC	PALE YELD AC	1.540	AC	CLEAR AC	AC
2/10/88	NORMAL				315 AC	N/A	42 AC	PALE YELD AC	1.560	AC	CLEAR AC	AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM												
DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS



KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION  
SUB. NAME COATING SUB

CITY BATTLE CREEK MI  
UNIT # ANGELL PLANT OTHER

ID # 36125000 DATE PRINTED  
LOCATION INDOOR / GROUND

### NAMEPLATE DATA

MFG. G.E.  
DATE MFG.  
S/N 0018527  
KVA 750  
PRI 2,500  
SEC 400  
EQUIP. TYPE TRANSFORMER  
TRANS CLASS GA  
IMPEDANCE 3.5%  
PHASE/CYCLE 3/60  
LIQUID TYPE ASKAREL 55 rise  
GAL LIQUID 380

### ADDITIONAL EQUIPMENT

RADIATORS YES  
FANS NO  
H2O COOLED NO  
OIL PUMPS NO  
TOP FPV 1.00 IN  
BOTTOM FPV 1.00 IN  
OTHER ACCESS  
CONSERVATORS NO  
LTC COMP NO  
BUSHING LOC 200  
HOSE LENGTH 200  
DE-ENERGIZED  
POWER V/A 240

### VISUAL INSPECTION

PAINT CONDITION FAIR LEAKS YES/NO

### PCB CONTENT / EXPRESSED IN PPB

DATE OF SERVICE 1242 AROCLOR 1254 AROCLOR 1260 AROCLOR OTHER

### FIELD SERVICE

COLOR LABEL CLASS

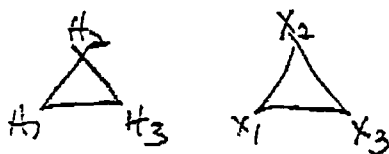
### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR	VISUAL
3/00/76					.020 AC	N/A	48 AC	UTR WHITE AC	1.340 AC	CLEAR AC
11/00/79					.020 AC	N/A	39 AC	UTR WHITE AC	1.340 AC	CLEAR AC
12.19/80		NORMAL	45 C		.020 AC	N/A		UTR WHITE AC	1.340 AC	CLEAR AC
1/07/85		LOW	43 C		.035 AC	N/A		PALE YELD AC	1.340 AC	CLEAR AC
3/26/87		LOW	41 C		.015 AC	N/A	35 AC	PALE YELD AC	1.340 AC	CLEAR AC
2/10/88		LOW	45 C		.010 AC	N/A	32 AC	PALE YELD AC	1.340 AC	CLEAR AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOT. GA.
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Dyed

12.200 Total wt.  
Bolted Top

90 H  
54 W  
52 D

Elevator  
96"

Loading Dock Access

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION  
MFG WEST  
S/N YDR4085

KVA

1,000

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL PLT

UNIT #

SECONDARY

480

ID #

### KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/17/83		23E	21.07			
1/30/85		23E	11.85			
3/23/87			10.33			
2/19/88		23E	10.00			

### ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM
------	---------	----------	------	------	--------	------	--------	-----	------------

A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

### LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

ID #

MPB G.E.

KVA

1,400

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL PLT

UNIT #

S/N 21135330

SECONDARY

480

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM.

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/ DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/82		25E	35.00			
5/24/87			24.70			
2/10/83		25E	16.00			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM
------	---------	----------	------	------	--------	------	--------	-----	------------

2 A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
3 SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG J.E.

KVA

750

PRIMARY

2,400

SUB NAME POWER HOUSE

UNIT # ANGELL

S/N 8113526

SECONDARY 480

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83		25E	22.97			
1/27/85		25E	47.29			
3/28/87			41.40			
2/19/88		25E	25.50			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM
------	---------	----------	------	------	--------	------	--------	-----	------------

A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG G.E.

KVA

1,000

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL PLT

UNIT #

ID # 3

S/N 2115327

SECONDARY

480

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/88		25E	46.73			
1/07/89		25E	22.80			
3/23/87			57.45			
2/19/88		25E	23.00			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM
------	---------	----------	------	------	--------	------	--------	-----	------------

\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
 \* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG G.E.

KVA

200

PRIMARY

2,400

SUB NAME COATING ROOM SUB

UNIT # ANGELL P

S/N 6037219

SECONDARY

208

ID #

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/ DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/88		25E	34.13			
1/17/89		25E	20.80			
3/26/87			34.88			
2.19/88		25E	28.60			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM
------	---------	----------	------	------	--------	------	--------	-----	------------

\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
 \* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MPG Q.E.

KVA

750

PRIMARY

2,400

SUB NAME COATING SUB

UNIT # ANGELL

S/N 8113323

SECONDARY

400

ID #

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/88		25E	45.40			
1/07/88		25E	42.07			
3/24/87			44.40			
2/19/88		25E	34.50			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM
------	---------	----------	------	------	--------	------	--------	-----	------------

A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST: WALDORF CORPORATION

ID # 6512

MFG G.E.

KVA

200

PRIMARY

2,400

SUB NAME RIVER SUB ANGELL PLT

UNIT #

LOW LEFT

S/N 8057220

SECONDARY

400

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83		25C	22.03			
1/27/85		25C	14.10			
3/26/87			22.70			
2/10/88		25C	14.00			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
------	---------	----------	------	------	--------	------	--------	-----	------------	---------

1 A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
 \* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

ID # 36125000

MFG Q.E

KVA

300

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL PLT

UNIT #

S/N 2037212

SECONDARY

208

KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/ DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/15/88		25C	29.79			
1/07/85		25C	14.15			
9/28/87			16.79			
2/10/88		25C	11.50			

ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
------	---------	----------	------	------	--------	------	--------	-----	------------	---------

A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE



RE: PCB CONTENT RESULTS

Gentlemen:

Enclosed with this letter are the results of your PCB tests.

Please note that the Federal Register (vol. 44, no. 106, May 31, 1979, p. 31517) defines these three classes of transformers: (1) PCB transformers (those units containing 500 PPM or greater PCB's); (2) PCB-contaminated transformers (those units containing 50-500 PPM PCB) and (3) non-PCB transformers (those units containing less than 50 PPM PCB).

We have provided as an additional service to you color-coded labels for your transformers. These colors are: (1) YELLOW...for PCB equipment; (2) ORANGE...for PCB-contaminated equipment, and (3) GREEN...for non-PCB equipment. Only those units in category (1), PCB equipment, are required by the EPA to have labels.

The Same Federal Register (pg. 31538) states: "EPA will not consider it to be good judgement to assume that the sample has less than 50 PPM PCB because the experimental error of the procedure overlaps the cut-off point. Through experimental data and by cross-checking with other laboratories, we have determined a deviation of plus or minus 10%. For this reason, we have established our limits as below 45 PPM for non-PCBs, 45-450 PPM for PCB-contaminated oil and 450+ for PCB transformer oil.

A point to remember is that all samples other than transformer oil are classified as PCB's at 50 PPM or more.

A few of your test results may be reported using the following terms or abbreviations:

- ND - None Detected
- Trace - Less than 1 PPM
- UP - Unidentified Peaks - the result from the chromatograms displayed major peaks NOT ASSOCIATED with PCB's normally found in electrical transformer fluid.

Very truly yours,

*John Dargie*  
John Dargie  
Regional Sales Manager

JD/su

Enclosures: Updated masters -- file and discard any prior copies  
Colored labels -- apply to respective transformer



Acts 4:12

**DIVISION OF**  
**EDNyers**

**TRANSFORMER**  
**CONSULTANTS**

P.O. Box 4724  
Akron, Ohio 4  
Phone: (216) 6  
Toll Free: (800

March 15, 1988

Mr. Steve Weers  
Waldorf Corp.  
177 Angell St.  
Battle Creek, MI. 49016

REF: Verbal

Gentlemen:

Enclosed are the results of the transformer oils recently tested by our personnel.

Please refer to the section of the test data master sheet for the specific type of tests performed on your oil.

Normal servicing of units that contain PCB's in excess of 50. PPM is restricted by Federal Law. We can, however, lower the PCB concentration to acceptable limits. If you wish to discuss the options available please feel free to contact us.

Should you require further work on some of your transformers, a formal quotation will be forwarded per your request.

If you have any questions on this or any related matter, do not hesitate to contact our Tallmadge, Ohio office (216/533-2666).

Very truly yours,

CRAIG SCHLEY  
REGIONAL SALES

CS/jm



Acts 4:12

DIVISION OF  
ED MyersTRANSFORMER  
CONSULTANTS

P.O. BOX 4724, AKRON, OH 44310

Phone: (216) 60  
Toll Free: (800)

## TEST SURVEY RECAP

CUST# 34125000

WALDORF CORPORATION

BATTLE CREEK MI

3/02/83

## \* SUMMARY OF RESULTS \*

NOTE: EPA § CFR40-761 states that	TOTAL GALLONS OF LIQUID	2326
any transformer not tested for pcb content —>	TOTAL UNITS NOM-PCB	0
must be considered contaminated (30-300ppm)	TOTAL W/S EDNI PCB TEST	0
	TOTAL UNITS CONTAMINATED	0
	TOTAL UNITS PCB	8
	TOTAL REQUIRING PCB TEST	0
	TOTAL REQUIRING SERVICE	7
	TOTAL KVA	3200
	ESTIMATED VALUE OF UNITS	114,400.00

The national average cost of annual transformer maintenance is  
6 pct of transformer investment. (EPRI JOURNAL, March, 1986). Based  
on the above estimated value of units, average annual maintenance  
for these units would be \$6,864.00

A number of your transformers require service. If you did not receive a quotation with  
these test reports, please call our AKRON office for a comprehensive study and proposal  
to solve the various problems.



Acts 4:12

DIVISION OF  
EDMUNDSTRANSFORMER  
CONSULTANTS

P.O. BOX 4724, AKRON, OH 44310

Phone: (216) 633-2666  
Toll Free: (800) 321-9580

## TEST SURVEY RECAP

CUST# 36125000

WALDORF CORPORATION

BATTLE CREEK MI

3/28/88

TC#	SUBSTATION NAME	SIZE KVA	GALLONS LIQUID TYPE	PCB CLASS	PCB DATE	LST GC KF ICP PF	SERVICE PRODUCT
3	CONVEYOR ANGELL PLT	1000	240 ASKAREL PCB			AC AC	REPAIR/PAINT: SEE VISUAL DATA
4	CONVEYOR ANGELL PLT	1000	434 ASKAREL PCB			AC AC	REPAIR/PAINT: SEE VISUAL DATA
5	CONVEYOR ANGELL PLT	300	209 ASKAREL PCB			QU AC	DEHYDRATION
6	CONVEYOR ANGELL PLT	1000	434 ASKAREL PCB			QU AC	DEHYDRATION
7	POWER HOUSE	750	380 ASKAREL PCB			QU AC	REPAIR/PAINT: SEE VISUAL DATA DEHYDRATION
8	COATING ROOM SUB	200	115 ASKAREL PCB			AC AC	ACCEPTABLE DATA-RETEST 1 YEAR
9	COATING SUB	750	380 ASKAREL PCB			AC AC	REPAIR/PAINT: SEE VISUAL DATA
10	RIVER SUB ANGELL PLT	200	134 ASKAREL PCB			AC AC	REPAIR/PAINT: SEE VISUAL DATA

M5T540

Post-It™ brand fax transmittal memo 7671		# of pages » 20
To	Gary Ray	
Co.	Waldorf / St. P.	
Dept.	Co. Waldorf - B.C.	
Phone #		
Fax #	616 963-5564	

**DIVISION OF**  
**EDWARDS**

**TRANSFORMER**  
**CONSULTANTS**

P.O. Box 4724  
Akron, Ohio 44310  
Phone: (216) 633-2666  
Toll Free: (800) 321-9580

April 13, 1987

Waldorf Corp.  
177 Angell St.  
Battle Creek MI 49016

ATTN: Steve Weers

REF: 03673

Gentlemen:

Enclosed are the results of the transformer oils recently tested by our personnel.

Please refer to the section of the test data master sheet for the specific type of tests performed on your oil.

Normal servicing of units that contain PCB's in excess of 50 PPM is restricted by Federal Law. We can, however, lower the PCB concentration to acceptable limits. If you wish to discuss the options available please feel free to contact us.

Should you require further work on some of your transformers, a formal quotation will be forwarded per your request.

If you have any questions on this or any related matter, do not hesitate to contact our Tallmadge, Ohio office (216/633-2666).

Very truly yours,

*Craig Schley*  
Craig Schley  
Regional Sales

CS/jm

CUST WALDORF CORPORATION

MFG WEST

KVA

1,000

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL PLT

UNIT #

ID # 36125000

S/N YDR4085

SECONDARY

480

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/88			21.07			
1/07/85			11.35			
3/26/87			18.55			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
 \* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION  
SUB. NAME CONVEYOR ANGELL PLT

CITY BATTLE CREEK MI  
UNIT # OTHER

ID # 36125000 DATE PRINTED 4/09/87  
LOCATION INDOOR /GROUND

### NAMEPLATE DATA

MFG. G.E.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	0A
S/N 8113530	IMPEDENCE	5.631
KVA 1,000	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 480	BAL LIQUID	434

### ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
H2O COOLED	NO	BUSHING LOC	SIDE ENCLOSED
OIL PUMPS	NO	RECLAIMER	200 FEET
TOP FPV	1.00 IN	POWER V/A	240/40
BOTTOM FPV	1.00 IN	OTHER ACCESS	

### VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS YES/TFPV

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
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### FIELD SERVICE

COLOR LABEL CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
5/00/76					.045 AC	N/A	41 AC	WTR WHITE AC	1.340 AC	CLEAR AC	NONE AC
11/00/79					.045 AC	N/A	40 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/88	LOW		40 C		.070 AC	N/A		WTR WHITE AC	1.560 AC	CLEAR AC	NONE AC
1/07/85	*****	NOT TESTED PER CUSTOMER REQUEST									
9/26/87	LOW		30 C		.040 AC	N/A	38 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
------	---------	----------	--------	----------	---------	-----------------	----------------	--------	----------	-----------	-------------------	-----------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG G.E.

KVA

1,000

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL PLT

UNIT #

ID # 34125000

S/N 8113530

SECONDARY

480

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/89			35.00			
3/26/87			26.70			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
------	---------	----------	------	------	--------	------	--------	-----	------------	---------

\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
 \* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION  
SUB. NAME CONVEYOR ANGELL PLTCITY BATTLE CREEK MI  
UNIT #

OTHER

ID # 36125000

DATE PRINTED

4/09/87

LOCATION

INDOOR /GROUND

## NAMEPLATE DATA

MFG. S.E.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	0A
S/N 8037218	IMPEDENCE	4.90%
KVA 300	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 208	GAL LIQUID	209

## ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
H2O COOLED	NO	BUSHING LOC	SIDE ENCLOSED
OIL PUMPS	NO	RECLAIMER	200 FEET
TOP FPV	1.00 IN	POWER V/A	240/40
BOTTOM FPV	1.00 IN	OTHER ACCESS	

## VISUAL INSPECTION

PAINT CONDITION	GOOD	LEAKS	NONE
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## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
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## FIELD SERVICE

COLOR LABEL

CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
5/00/76					.025 AC	N/A	46 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/79					.030 AC	N/A	33 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83		NORMAL	30 C		.030 AC	N/A		WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
1/07/85		LOW	30 C		.020 AC	N/A		WTR WHITE AC	1.520 AC	CLEAR AC	NONE AC
3/26/87		LOW	40 C		.020 AC	N/A	34 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
------	---------	----------	--------	----------	---------	-----------------	----------------	--------	----------	-----------	-------------------	-----------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION  
MFG G.E.  
S/N 8037218

KVA

300

PRIMARY

2,400

SECONDARY

208

SUB NAME CONVEYOR ANGELL PLT

UNIT #

ID #

36125

0005

KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/89			20.73			
1/07/85			14.15			
9/26/87			16.70			

ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
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A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

LIQUID POWER FACTOR

DATE SERVICE

25 C

100 C

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

007

WALDORF BC

0616 963 5584

07:16 12/20/89

CUST. WALDORF CORPORATION

CITY

BATTLE CREEK MI

ID # 36125000

DATE PRINTED

4/09/87

SUB. NAME CONVEYOR ANGELL PLT

UNIT #

OTHER

LOCATION

INDOOR /GROUND

## NAMEPLATE DATA

MFG. G.E.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	DA
S/N 8113527	IMPEDENCE	5.63%
KVA 1,000	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 480	BAL LIQUID	434

## ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
H2O COOLED	NO	BUSHING LOC	SIDE ENCLOSED
OIL PUMPS	NO	RECLAIMER	200 FEET
TOP FPV	1.00 IN	POWER V/A	240/40
BOTTOM FPV	1.00 IN	OTHER ACCESS	

## VISUAL INSPECTION

PAINT CONDITION	GOOD	LEAKS	NONE
-----------------	------	-------	------

## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
-----------------	--------------	--------------	--------------	-------	---------------

## FIELD SERVICE

COLOR LABEL

CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
5/00/76					.050 AC	N/A	39 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/79					.010 AC	N/A	39 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83		NORMAL	25 C		.055 AC	N/A		WTR WHITE AC	1.520 AC	CLOUDY QU	NONE AC
1/07/85		LOW	30 C		.010 AC	N/A		WTR WHITE AC	1.520 AC	CLOUDY QU	NONE AC
3/26/87		NORMAL	30 C		.010 AC	N/A	39 AC	WTR WHITE AC	1.540 AC	CLOUDY QU	NONE AC

COMMENTS FREE WATER AND/OR CLOUDY OIL INDICATES MOISTURE.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
------	---------	----------	--------	----------	---------	-----------------	----------------	--------	----------	-----------	-------------------	-----------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG G.E.

KVA

1,000

PRIMARY

2,400

SUB NAME CONVEYOR ANGELL PLT

UNIT #

ID # 36125000

S/N 8113527

SECONDARY

480

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/ DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83			48.75			
1/9/85			22.80			
3/26/87			39.45			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
------	---------	----------	------	------	--------	------	--------	-----	------------	---------

\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
 \* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION  
SUB. NAME POWER HOUSE

CITY BATTLE CREEK MI  
UNIT # ANGELL PLANT OTHER

ID # 36125000 DATE PRINTED 4  
LOCATION INDOOR / GROUND

### NAMEPLATE DATA

MFG. G.E.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	0A
S/N 8113528	IMPEDENCE	5.83%
KVA 750	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 480	GAL LIQUID	380

### ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
W20 COOLED	NO	BUSHING LOC	SIDE
OIL PUMPS	NO	RECLAIMER	
TOP FPV	1.00 IN	POWER V/A	240/40
BOTTOM FPV	1.00 IN	OTHER ACCESS	

### VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS YES/BOTTOM GATE VALVE

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TC COI
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### FIELD SERVICE

7/85 UTILITY

COLOR LABEL CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIM
5/00/76					.090 AC	N/A	38 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE
11/00/79					.035 AC	N/A	39 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE
12/19/83		NORMAL	48 C		.040 AC	N/A		PALE YELD AC	1.540 AC	CLEAR AC	NONE
1/07/85		LOW	50 C		.040 AC	N/A		PALE YELD AC	1.540 AC	CLEAR AC	NONE
3/26/87		NORMAL	45 C		.035 AC	N/A	33 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
------	---------	----------	--------	----------	---------	-----------------	----------------	--------	----------	-----------	-------------------	-----------

KEY TO ABBREVIATIONS: AC - ACCEPTABLE QU - QUESTIONABLE UN - UNACCEPTABLE

CUST WALDORF CORPORATION

MFG S.E.

KVA

750

PRIMARY

2,400

SUB NAME POWER HOUSE

ID # 36125000

S/N 8113528

UNIT # ANGELL PLANT

SECONDARY

480

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83			82-97			
1/07/85			AT 20			
3/26/87			AT 20			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
------	---------	----------	------	------	--------	------	--------	-----	------------	---------

A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION  
SUB. NAME COATING ROOM SUBCITY BATTLE CREEK MI  
UNIT # ANGELL PLANT

OTHER 3 TOP PLUGS

ID # 36125000

DATE PRINTED

4/09/87

LOCATION INDOOR /GROUND

## NAMEPLATE DATA

MFG. G.E.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	0A
S/N 8037219	IMPEDENCE	4.85%
KVA 200	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 208	GAL LIQUID	115

## ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
H2O COOLED	NO	BUSHING LOC	SIDE ENCLOSED
OIL PUMPS	NO	RECLAIMER	200 FEET
TOP FPV	1.00 IN	POWER V/A	240/40
BOTTOM FPV	1.00 IN	OTHER ACCESS	

## VISUAL INSPECTION

PAINT CONDITION	GOOD	LEAKS	NONE
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## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TOTAL CONTENT
-----------------	--------------	--------------	--------------	-------	---------------

## FIELD SERVICE

COLOR LABEL

CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIMENT
5/00/76					.030 AC	N/A	38 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
11/00/79					.030 AC	N/A	35 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
12/19/83		NORMAL			.020 AC	N/A		WTR WHITE AC	1.540 AC	CLEAR AC	NONE AC
1/07/85		NORMAL	15 C		.040 AC	N/A		PALE YELO AC	1.540 AC	CLEAR AC	NONE AC
3/26/87		NORMAL			.020 AC	N/A	32 AC	PALE YELO AC	1.540 AC	CLEAR AC	NONE AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
------	---------	----------	--------	----------	---------	-----------------	----------------	--------	----------	-----------	-------------------	-----------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG G.E.

KVA

200

PRIMARY

2,400

SUB NAME COATING ROOM SUB

UNIT # ANGELL PL

S/N 8037219

SECONDARY

208

ID #

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PER CENT MOISTURE DRY WEIGHT	PER CENT MOISTURE SATURATION	LOADING FACTOR
12/19/83			36.19			
1/07/85			28.86			
3/26/87			84.80			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	C
------	---------	----------	------	------	--------	------	--------	-----	------------	---

\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
\* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION  
SUB. NAME COATING SUB

CITY BATTLE CREEK MI  
UNIT # ANGELL PLANT  
OTHER

ID # 86125000 DATE PRINTED  
LOCATION INDOOR / GROUND

### NAMEPLATE DATA

MFG. G.E.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	DA
S/N 8118529	IMPEDENCE	5.83%
KVA 750	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 480	GAL LIQUID	380

### ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
H2O COOLED	NO	BUSHING LDC	SIDE
OIL PUMPS	NO	RECLAIMER	200
TOP FPV	1.00 IN	POWER V/A	240/
BOTTOM FPV	1.00 IN	OTHER ACCESS	

### VISUAL INSPECTION

PAINT CONDITION GOOD LEAKS YES/TFV

### PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER
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### FIELD SERVICE

COLOR LABEL CLASS

### LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	S.
5/00/76					.020 AC	N/A	40 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NO
11/00/79					.020 AC	N/A	39 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NO
12/19/83		NORMAL	45 C		.020 AC	N/A		WTR WHITE AC	1.540 AC	CLEAR AC	NO
1/07/85		LOW	48 C		.025 AC	N/A		PALE YELD AC	1.540 AC	CLEAR AC	NO
3/26/87		LOW	41 C		.015 AC	N/A	33 AC	PALE YELD AC	1.540 AC	CLEAR AC	NO

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

### GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
------	---------	----------	--------	----------	---------	-----------------	----------------	--------	----------	-----------	-------------------	-----------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG G.E.

KVA

750

PRIMARY

2,400

SUB NAME COATING SUB

ID #  
UNIT # ANGELL P

S/N 8113529

SECONDARY

480

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PERCENT MOISTURE/DRY WEIGHT	PERCENT MOISTURE SATURATION	AGING FACTOR
12/19/83			45.40			
1/07/85			42.07			
9/26/87			44.40			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM
------	---------	----------	------	------	--------	------	--------	-----	------------

\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
\* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION

CITY

BATTLE CREEK MI

ID # 36125000

DATE PRINTED

SUB. NAME RIVER SUB ANGELL PLT UNIT #

LOW LEFT

OTHER

LOCATION

INDOOR /GROUND

## NAMEPLATE DATA

MFG. G.E.	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	0A
S/N 8037220	IMPEDENCE	4.70%
KVA 200	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKAREL
SEC 480	GAL LIQUID	134

## ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR
FANS	NO	TAP CHANGER
H2O COOLED	NO	BUSHING LDC
OIL PUMPS	NO	RECLAIMER
TOP FPV	1.00 IN	POWER V/A
BOTTOM FPV	1.00 IN	OTHER ACCESS

## VISUAL INSPECTION

PAINT CONDITION	GOOD	LEAKS	NONE
-----------------	------	-------	------

## PCB CONTENT / EXPRESSED IN

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER
-----------------	--------------	--------------	--------------	-------

## FIELD SERVICE

COLOR LABEL

CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL
5/00/74					.030 AC	N/A	43 AC	WTR WHITE AC	1.540 AC	CLEAR AC
11/00/79					.030 AC	N/A	39 AC	WTR WHITE AC	1.540 AC	CLEAR AC
12/19/83		NORMAL			.070 AC	N/A		WTR WHITE AC	1.540 AC	CLOUDY QU
1/07/85		LOW	25 C		.035 AC	N/A		PALE YELO AC	1.540 AC	CLOUDY QU
3/26/87		LOW			.020 AC	N/A	97 AC	PALE YELO AC	1.540 AC	CLEAR AC

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE
------	---------	----------	--------	----------	---------	-----------------	----------------	--------	----------	-----------	-------------------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST WALDORF CORPORATION

MFG G.E.

KVA

200

PRIMARY

2,400

SUB NAME RIVER SUB ANGELL FLT

UNIT # LOW LEFT

ID # 36125000

S/N 8037220

SECONDARY

480

## KARL FISCHER TESTING/MOISTURE CONTENT/EXPRESSED IN PPM

DATE	SERVICE	TEMPERATURE	MOISTURE PPM	PERCENT MOISTURE/DRY WEIGHT	PER CENT MOISTURE SATURATION	AGING FACTOR
12/19/83			22.03			
1/6/7/85			14.570			
5/26/87			22.70			

## ICP/METALS-IN-OIL/EXPRESSED IN PPM

DATE	SERVICE	ALUMINUM	IRON	ZINC	COPPER	LEAD	SILVER	TIN	MOLYBDENUM	CADMIUM
------	---------	----------	------	------	--------	------	--------	-----	------------	---------

\* A DISSOLVED METALS-IN-OIL TEST CAN BE MEANINGFUL IN EVALUATING IN-SERVICE AND  
 \* SERVICE-AGED TRANSFORMERS FOR MAX-LIFE RESULTS.

## LIQUID POWER FACTOR

DATE	SERVICE	25 C	100 C
------	---------	------	-------

KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

CUST. WALDORF CORPORATION

CITY

BATTLE CREEK MI

ID # 96125000

DATE PRINTED 4/

SUB. NAME CONVEYOR ANGELL PLT

UNIT #

OTHER

LOCATION

INDOOR / GROUND

## NAMEPLATE DATA

MFG. WEST	EQUIP. TYPE	TRANSFORMER
DATE MFG.	TRANS CLASS	DA
S/N YOR4085	IMPEDENCE	5.60%
KVA 1,000	PHASE/CYCLE	3/60
PRI 2,400	LIQUID TYPE	ASKABEL
SEC 480	GAL LIQUID	240

## ADDITIONAL EQUIPMENT

RADIATORS	YES	CONSERVATOR	NO
FANS	NO	TAP CHANGER	NO
H2O COOLED	NO	BUSHING LOC	SIDE E
OIL PUMPS	NO	RECLAIMER	200 FEE
TOP FPV	1.00 IN	POWER V/A	240/40
BOTTOM FPV	1.00 IN	OTHER ACCESS	

## VISUAL INSPECTION

PAINT CONDITION	FAIR	LEAKS	YES/RIGHT TOP CORNER
-----------------	------	-------	----------------------

## PCB CONTENT / EXPRESSED IN PPM

DATE OF SERVICE	1242 AROCLOR	1254 AROCLOR	1260 AROCLOR	OTHER	TO CONT
-----------------	--------------	--------------	--------------	-------	---------

## FIELD SERVICE

COLOR LABEL

CLASS

## LIQUID SCREEN TEST DATA

DATE	SERVICE	LEVEL	TEMP	P/V	ACID	IFT	DIEL	COLOR	SP. GR.	VISUAL	SEDIME
5/00/76					.020 AC	N/A	42 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE
11/00/79			0 C	0.0	.020 AC	N/A	34 AC	WTR WHITE AC	1.540 AC	CLEAR AC	NONE
12/19/83		NORMAL	38 C	0.2	.010 AC	N/A		WTR WHITE AC	1.560 AC	CLEAR AC	NONE
1/07/85		LOW	30 C		.015 AC	N/A		PALE YELD AC	1.520 AC	CLEAR AC	NONE
3/26/87		NORMAL	40 C	0.2	.010 AC	N/A	37 AC	PALE YELD AC	1.540 AC	CLEAR AC	NONE

COMMENTS TRANSFORMER LIQUID TEST DATA ACCEPTABLE IN ALL CATEGORIES.

## GAS-IN-OIL ANALYSIS / GAS CHROMATOGRAPHY EXPRESSED IN PPM

DATE	SERVICE	HYDROGEN	OXYGEN	NITROGEN	METHANE	CARBON MONOXIDE	CARBON DIOXIDE	ETHANE	ETHYLENE	ACETYLENE	TOTAL COMBUSTIBLE	TOTAL GAS
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KEY TO ABBREVIATIONS: AC — ACCEPTABLE QU — QUESTIONABLE UN — UNACCEPTABLE

**DIVISION OF TRANSFORMER  
SALES & SERVICE  
CONSULTANTS**

P.O. BOX 4724, AKRON, OH 44310

TEST SURVEY RECORD

CUST# 26125000	WALDORF CORPORATION	BATTLE CREEK MI	4/10/87
TC#	SUBSTATION NAME	SIZE GALLONS LIQUID KVA	PCB CLASS TYPE DATE
3	CONVEYOR ANGELL PLT	1000 240 ASKAREL PCB	PC AC REPAIR-SEE VISUAL INSPECT
4	CONVEYOR ANGELL PLT	1000 424 ASKAREL PCB	AC AC REPAIR-SEE VISUAL INSPECT
5	CONVEYOR ANGELL PLT	300 209 ASKAREL PCB	AC AC ACCEPTABLE DATA-RETEST 1
6	CONVEYOR ANGELL PLT	1000 434 ASKAREL PCB	QU AC ACCEPTABLE DATA-RETEST 1
7	POWER HOUSE	750 330 ASKAREL PCB	AC AC REPAIR-SEE VISUAL INSPECT
8	COATING ROOM SUB	200 115 ASKAREL PCB	AC AC ACCEPTABLE DATA-RETEST 1
9	COATING SUB	750 380 ASKAREL PCB	AC AC ACCEPTABLE DATA-RETEST 1
10	RIVER SUB ANGELL PLT	200 134 ASKAREL PCB	AC AC ACCEPTABLE DATA-RETEST 1

# DIVISION OF PRIVATE TRANSFORMER CONSULTANTS

P.O. BOX 4724, AKRON, OH 44310

## TEST SURVEY RECAP

CUST# 36125000

WALDORF CORPORATION

BATTLE CREEK MI

4/10/87

## \* SUMMARY OF RESULTS \*

NOTE: EPA # CFR40-761 states that

any transformer not tested for pcb content must be considered contaminated (50-500ppm)

TOTAL GALLONS OF LIQUID	2326
TOTAL UNITS NON-PCB	0
TOTAL W/O SDHI PCB TEST	0
TOTAL UNITS CONTAMINATED	0
TOTAL UNITS PCB	8
TOTAL REQUIRING PCB TEST	0
TOTAL REQUIRING SERVICE	0
TOTAL KVA	5200
ESTIMATED VALUE OF UNITS	114,400.00

The national average cost of annual transformer maintenance is 6 pct of transformer investment. (EPRI JOURNAL, March, 1986). Based on the above estimated value of units, average annual maintenance for these units would be \$6,864.00.

A number of your transformers require service. If you did not receive a quotation with these test reports, please call our AKRON office for a comprehensive study and proposal to solve the various problems.

KST540

## QUESTION 25

# **STAGE I ASSESSMENT PLAN**

## **KALAMAZOO RIVER ENVIRONMENT SITE**

Michigan Department of Environmental Quality  
Michigan Department of Attorney General  
U.S. Fish and Wildlife Service  
National Oceanic and Atmospheric Administration

*Prepared by:*  
Stratus Consulting Inc.  
PO Box 4059  
Boulder, CO 80306-4059

*Under subcontract to:*  
DLZ Corporation

November 2000

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# Contents

<b>Figures</b>	.....	v
<b>Tables</b>	.....	vii
<b>Acronyms</b>	.....	ix
<b>Chapter 1</b>	<b>Introduction</b>	
1.1	The Natural Resource Damage Assessment Process.....	1-2
1.2	The KRE Preassessment Screen.....	1-3
1.3	The Stage I Assessment Plan.....	1-4
1.4	Public Review and Comment.....	1-5
1.5	Organization of the Stage I Assessment Plan.....	1-6
<b>Chapter 2</b>	<b>Background Information on the Assessment Area</b>	
2.1	Description of the Assessment Area .....	2-1
2.2	PCB Releases to the KRE .....	2-1
2.3	RI/FS Activities.....	2-5
<b>Chapter 3</b>	<b>Authority of Trustees and Decision to Proceed with a Type B Assessment</b>	
3.1	Authority .....	3-1
3.1.1	Michigan Departments of Environmental Quality and Attorney General Natural Resource Trusteeship Authority .....	3-1
3.1.2	U.S. Department of the Interior and U.S. Department of Commerce Natural Resource Trusteeship Authority .....	3-2
3.2	Decision to Perform a Type B Assessment .....	3-3
<b>Chapter 4</b>	<b>Confirmation of Exposure and Recovery Period</b>	
4.1	Surface Water/Sediment Resources .....	4-2
4.2	Groundwater Resources .....	4-7
4.3	Geologic Resources .....	4-8
4.4	Biological Resources .....	4-10
4.4.1	Fish .....	4-10
4.4.2	Birds .....	4-10
4.4.3	Terrestrial invertebrates.....	4-12
4.4.4	Mammals.....	4-13
4.5	Recovery Period .....	4-17

**Chapter 5     Stage I Injury Assessment**

5.1	Injury Assessment Approach.....	5-1
5.2	Data Sources.....	5-2
	5.2.1    Available data.....	5-2
	5.2.2    Supplemental data collection .....	5-4
5.3	Pathway Evaluation.....	5-5
5.4	Injury Determination and Quantification .....	5-5
	5.4.1    Surface water resources.....	5-5
	5.4.2    Sediment resources.....	5-8
	5.4.3    Groundwater resources.....	5-12
	5.4.4    Geologic resources .....	5-13
	5.4.5    Biological resources .....	5-15
5.5	Procedures for Sharing Data.....	5-20

**Chapter 6     Stage I Damage Determination**

6.1	Overview .....	6-1
6.2	Restoration Planning .....	6-2
	6.2.1    Sediment/soil restoration.....	6-2
	6.2.2    Ecosystem-based restoration .....	6-3
	6.2.3    Restoration planning activities .....	6-5
6.3	Compensable Value Determination .....	6-7
6.4	Relationship to the RI/FS Process .....	6-9

<b>References</b>	.....	R-1
-------------------	-------	-----

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## Figures

1.1	Simplified NRDA process.....	1-2
2.1	Kalamazoo River Environment.....	2-2
2.2	Location of PRP paper mill facilities .....	2-4
4.1	Surface water PCB concentrations in Portage Creek upstream and downstream of Allied Paper facilities, in 1993.....	4-3
4.2	Surface water PCB concentrations in Portage Creek upstream and downstream of Allied Paper facilities, 1985-1987 .....	4-4
4.3	PCB concentrations in Kalamazoo River surface water, 1985-1987 .....	4-5
4.4	PCB concentrations in Portage Creek surficial sediments .....	4-6
4.5	PCB concentrations in Kalamazoo River bed sediments .....	4-7
4.6	PCB concentrations in Kalamazoo River floodplain soils, 1983-1993.....	4-9
4.7	PCB concentrations in Kalamazoo River skinless carp fillets, 1993 .....	4-11
4.8	PCB concentrations in Kalamazoo River skin-on smallmouth bass fillets, 1993 .....	4-12
6.1	Process for identifying, selecting, and costing preferred restoration alternatives .....	6-6

---

# Tables

2.1	PRP facilities where recycled paper waste stream material was dewatered or disposed.....	2-6
4.1	Example PCB concentrations in groundwater underlying Allied Paper Portage Creek facilities.....	4-8
4.2	Summary of historical data on Kalamazoo River fish fillet PCB concentrations downstream of PRP facilities.....	4-13
4.3	PCB concentrations in KRE ducks and geese.....	4-14
4.4	PCB concentrations in KRE bald eagle and great blue heron eggs.....	4-15
4.5	PCB concentrations in KRE great horned owl and red-tailed hawk eggs.....	4-15
4.6	PCB concentrations in earthworms from Kalamazoo River floodplains.....	4-16
4.7	PCB concentrations in whole-body white-footed mice from Kalamazoo River floodplains.....	4-16
4.8	PCB concentrations in KRE mink.....	4-17
4.9	PCB concentrations in KRE muskrat.....	4-18
5.1	Surface water criteria and standards established for total PCBs.....	5-7
5.2	Components of relevant surface water injury definitions.....	5-8
5.3	Components of relevant sediment injury definitions.....	5-10
5.4	Toxicological benchmarks: PCB soil threshold concentrations for protection of wildlife.....	5-14
5.5	Components of relevant biological resources injury definitions.....	5-17
5.6	Fish consumption advisories issued by Michigan for the Kalamazoo River and Portage Creek because of elevated concentrations of PCBs.....	5-19

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# 1. Introduction

The Director of the Michigan Department of Environmental Quality (MDEQ), the Attorney General of the State of Michigan, and the Secretary of the Interior as represented by the Regional Director of the U.S. Fish and Wildlife Service (U.S. FWS), in coordination with the Secretary of Commerce as represented by the National Oceanic and Atmospheric Administration (NOAA) (collectively referred to as the Trustees), are in the process of assessing damages to natural resources in the Kalamazoo River Environment (KRE) that have resulted from releases of hazardous substances into the KRE. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) [§ 107 (f), 42 U.S.C. § 9607, as amended] and the Clean Water Act (Federal Water Pollution Control Act, or CWA) [33 U.S.C. § 1321] provide authority to the Trustees to seek such damages. Additionally, the State Trustees have authority to seek the full value of the injuries to natural resources pursuant to Section 20126a(1)(c) of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), as well as Section 3115(2) of Part 31, Water Resources Protection, of NREPA.

This document presents the Stage I Assessment Plan for the natural resource damage assessment (NRDA) being conducted by the Trustees. The Stage I Assessment Plan, which describes the approach and methods that the Trustees will use in conducting the Stage I assessment, is the second step in the NRDA process and follows the KRE Preassessment Screen prepared by the Trustees in May 2000. The Stage I Assessment Plan was prepared in accordance with the U.S. Department of the Interior (DOI) NRDA regulations as set forth at 43 CFR Part 11.<sup>1</sup> These regulations are not mandatory. However, assessments performed in compliance with these regulations have the force and effect of a rebuttable presumption in any administrative or judicial proceeding under CERCLA [42 U.S.C. § 9607(f)(2)(C)]. The DOI guidelines also provide a useful context within which the various aspects of the assessment can be evaluated, and therefore have been followed in this document.

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1. 43 CFR Part 11 regulations were authored by the U.S. Department of the Interior (DOI), and are referred to as the DOI regulations in this document.

## 1.1 The Natural Resource Damage Assessment Process

Certain state and federal agencies that have been designated as Trustees are empowered to obtain compensation from potentially responsible parties (PRPs) for damages for injury to, destruction of, or loss of natural resources caused by hazardous substance releases. Trustees must use recovered funds to restore, replace, rehabilitate, or acquire the equivalent of the injured natural resources. In lieu of receiving funds for damages to natural resources, the Trustees may allow the PRPs to directly implement restoration activities.

Important NRDA terms include:

- Injury** A measurable adverse change, either long or short term, in the chemical or physical quality or the viability of a natural resource resulting from the release of a hazardous substance [43 CFR § 11.14(v)].
- Service** The physical and biological functions performed by the resource, including human uses of those functions [43 CFR § 11.14(nn)]. Services may include such features as wildlife habitat, recreation, erosion control, and subsistence.
- Damages** The amount of money sought by the Trustees as compensation for injury, destruction, and loss of natural resources [43 CFR § 11.14(i)]. All recovered damages must be put toward environmental restoration by the Trustees. The Trustees may also accept restoration activities in lieu of damages.

The DOI regulations for conducting an NRDA involve four major components (Figure 1.1). The first is the development of a **Preassessment Screen**, which determines whether a discharge or release of hazardous substances warrants an NRDA. Preparation of an **Assessment Plan** represents the second phase. The assessment plan is a work plan for the NRDA and ensures that the assessment proceeds in a cost-effective manner. Trustees are required to provide an opportunity for public review of, and comment on, the assessment plan. The third component involves conducting the **Assessment**, which includes performing studies to determine whether injury has occurred, quantifying the injuries and reduction of services, and determining the appropriate restoration actions and compensation for the injuries. The fourth component consists of the **Post-assessment**. A report of assessment containing the results of the assessment work

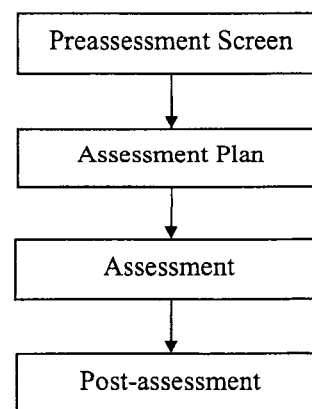


Figure 1.1 Simplified NRDA process.

is prepared and made available to the public. The PRPs are then presented with the amount of money and/or the required restoration activities sought by the Trustees as compensation for injury, destruction, and loss of natural resources, and a restoration plan is developed and implemented.

## 1.2 The KRE Preassessment Screen

The Trustees released a Preassessment Screen for the KRE NRDA in May 2000. The Preassessment Screen documents the Trustees' determination that there is a reasonable probability of making a successful claim for damages to natural resources and that the Trustees will proceed to the next step of preparing an Assessment Plan.

Specifically, the Preassessment Screen for the KRE concluded the following:

1. *Releases of hazardous substances have occurred* [43 CFR § 11.23(e)(1)]. Numerous investigators, including the Michigan Water Resources Commission, the Michigan Department of Natural Resources (MDNR),<sup>2</sup> Georgia-Pacific, and various contractors have demonstrated that multiple, and at times continuous, releases and re-releases of the hazardous substance polychlorinated biphenyls (PCBs) have occurred and continue to occur as a result of operations at paper company facilities in the KRE. The PRPs that have been identified as having contributed to the releases of PCBs are Allied Paper, Inc. and its parent company, Millennium Holdings, Inc.; the Georgia-Pacific Corporation; Plainwell Inc.; and the Fort James Corporation. The paper company facilities were involved in recycling carbonless copy paper that contained PCBs from the early 1950s through 1971, and the waste management and disposal practices of the facilities resulted in direct releases of PCBs into the KRE.
2. *Natural resources for which the Trustees can assert trusteeship have been, or are likely to be, adversely affected by the release of hazardous substances* [43 CFR § 11.23(e)(2)]. Trustee natural resources that have been affected or potentially affected by releases of PCBs from the PRP facilities include, but are not limited to, surface water resources, including surface water and sediments (bed, bank, and shoreline); groundwater resources; geologic resources, including floodplain soils; aquatic biota, including aquatic

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2. Pursuant to State of Michigan Executive Order 1995-18 on October 1, 1995, the division of the MDNR that has responsibility for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site RI/FS and the KRE NRDA was transferred to the Michigan Department of Environmental Quality (MDEQ) (which was created by this Executive Order).

invertebrates and resident and migratory fish; and terrestrial biota, including terrestrial invertebrates, mammals, and birds.

3. *The quantity and concentration of the released substances are sufficient to potentially cause injury to natural resources* [43 CFR § 11.23(e)(3)]. The concentrations of PCBs measured in various KRE media are sufficient to potentially cause injury to KRE natural resources. PCB concentrations exceed injury criteria specified in the DOI NRDA regulations (e.g., surface water quality standards and criteria; Food and Drug Administration tolerance levels), and exceed concentrations at which adverse effects to biological resources are expected.
4. *Data sufficient to pursue an assessment are readily available or likely to be obtained at reasonable cost* [43 CFR § 11.23(e)(4)]. Data relevant to conducting an assessment of natural resource damages in the KRE have been collected as part of ongoing remedial investigation/feasibility study (RI/FS) activities. Such data include information on PCB sources, releases, pathways, and concentrations in the environment. Other potentially relevant data from other sources are also available.
5. *Response actions carried out or planned will not sufficiently remedy the injury to natural resources without further action* [43 CFR § 11.23(e)(5)]. PCBs degrade slowly and are persistent in the environment. Response actions are unlikely to restore the injured natural resources to baseline<sup>3</sup> or compensate the public for losses of natural resource services.

Based on these criteria, the Trustees determined that there is a reasonable probability of making a successful natural resource damages claim, and that they would proceed with the preparation of an Assessment Plan.

### 1.3 The Stage I Assessment Plan

The Trustees have decided to conduct the NRDA for the KRE site in stages. In Stage I, the Trustees will develop preliminary conclusions regarding the types and magnitudes of injury and damages resulting from hazardous substance releases into the KRE, and will develop preliminary restoration alternatives to address those injuries and damages. The Stage I assessment is intended to be preliminary, relatively rapid, based primarily on existing data, and highly cost-effective. The results of the Stage I assessment will be used by the Trustees to help define any additional focused work that could be conducted in the next stage and, if appropriate, to help evaluate any

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3. Baseline is the condition that would have existed in the KRE had the releases of hazardous substances not occurred [43 CFR § 11.14(e)].

potential settlement options. If deemed necessary by the Trustees, a more detailed Stage II assessment may be conducted in which the Trustees conduct focused NRDA studies to address uncertainties in the Stage I assessment.

This Stage I Assessment Plan describes the approach and methods that will be used in the Stage I Assessment. The purpose of the Assessment Plan is to ensure that the assessment is performed in a planned and systematic manner and that the methodologies selected for use in the assessment can be conducted at a reasonable cost [43 CFR § 11.30(b)]. This Stage I Assessment Plan includes:

- ▶ descriptions of the geographic areas and natural resources involved [43 CFR § 11.31(a)(2)]
- ▶ a statement of the authority for asserting trusteeship, or cotrusteeship, for those natural resources considered within the Stage I Assessment Plan [43 CFR § 11.31(a)(2)]
- ▶ information sufficient to demonstrate coordination with remedial investigation and feasibility studies (RI/FS) [43 CFR § 11.31(a)(3)]
- ▶ procedures and schedules for sharing data, split samples, and results of analyses with PRPs and other interested parties [43 CFR § 11.31(a)(4)]
- ▶ explanation of the decision to proceed with a type B assessment [43 CFR § 11.31(b)]
- ▶ the results of confirmation of exposure of natural resources to hazardous substances [43 CFR § 11.31(c)(1)].

A formal Quality Assurance Plan for data collection was not developed specifically for the Stage I Assessment, since the Stage I Assessment relies primarily on data and information that already exist and the collection of new data will be limited [43 CFR § 11.31(c)(2)]. This document does address procedures to assess and ensure the quality of existing data that will be used in the Stage I Assessment Plan and provides information on the sampling protocols and Quality Assurance Plans that will be followed for the limited collection of additional data (Section 5.2).

Because the Stage I assessment is based primarily on existing data, the results of the Stage I assessment may differ from those that would result from a more complete assessment. Nevertheless, conducting the assessment in stages and making use of the data already available for the site is a cost-effective means of conducting the assessment.

## **1.4 Public Review and Comment**

The DOI regulations provide that an Assessment Plan be made available for review and comment by PRPs; other natural resource trustees; other affected federal, state, or tribal agencies; and any other interested members of the public for a period of 30 days. While not required under state law, the Trustees believe that a public comment period is appropriate and will provide an opportunity for involvement by PRPs, other governmental agencies, and the public in this important matter. It may also provide the Trustees with new information and ideas that they may incorporate into their assessment. The Trustees are, therefore, providing a period of 30 calendar days for public comment.

Written comments on the Stage I Assessment Plan may be sent to:

Anne Pulley  
Michigan Department of Environmental Quality  
Compliance and Enforcement Section  
Environmental Response Division  
PO Box 30426  
Lansing, MI 48909-7926

## **1.5 Organization of the Stage I Assessment Plan**

This Stage I Assessment Plan is organized as follows: Chapter 2 presents an overview of the assessment area and a brief description of PCB releases. Chapter 3 describes the authority of the Trustees to proceed with the assessment and describes the Trustees' decision to proceed with a type B assessment. Chapter 4 provides confirmation that natural resources have been exposed to PCBs in the assessment area and presents a preliminary estimate of the natural recovery period. Chapter 5 describes the approach and methods to be employed by the Trustees in the injury assessment, and Chapter 6 describes the Stage I damage determination process, including both restoration planning and compensable value determination. References cited in the text of the document are provided at the end of the document.

This Stage I Assessment Plan was prepared in response to a work assignment and requests from the Michigan MDEQ to Stratus Consulting, under subcontract to DLZ Corporation.

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## **2. Background Information on the Assessment Area**

### **2.1 Description of the Assessment Area**

The Kalamazoo River drainage basin, located in southwestern Michigan, encompasses approximately 5,180 square kilometers (2,000 square miles) (Figure 2.1). The mainstem of the Kalamazoo River is approximately 195 kilometers (120 miles) long and flows from the town of Albion, Michigan, to Lake Michigan near the city of Saugatuck, Michigan. Between Morrow Pond, just upstream of the city of Kalamazoo, and the river mouth, the river alternates between free-flowing sections and a series of dams. The Plainwell, Otsego, and Trowbridge dams have been lowered to their sill levels, exposing former impoundment sediments as floodplain soils (Blasland, Bouck & Lee, 1992). The river is still impounded by the Otsego City, Allegan City, and Lake Allegan (or Caulkins) dams (Blasland, Bouck & Lee, 1992). The lower Kalamazoo River, downstream of Lake Allegan, has been designated a Wild-Scenic River by the Michigan Natural Resources Commission under the Natural Rivers Act (Act 231 of the Public Acts of 1970) (MDNR, 1987b). The Kalamazoo River has several tributaries, including Portage Creek, which is approximately 18.5 miles long (MDNR, 1987b).

The KRE Assessment Area includes natural resources within the Portage Creek and Kalamazoo River riparian corridors and Lake Michigan that are exposed to hazardous substances released from the PRP facilities. Descriptions of the specific resources being addressed in the Stage I assessment are included in Chapter 5.

### **2.2 PCB Releases to the KRE**

PCBs were released into the KRE from various industrial facilities in Kalamazoo and Plainwell. The Trustees have identified Allied Paper, Inc. and its parent company, Millennium Holdings, Inc. (Allied Paper); the Georgia-Pacific Corporation (Georgia-Pacific); Plainwell Inc. (Simpson Plainwell Paper); and the Fort James Corporation (Fort James) as PRPs<sup>1</sup> for the PCB releases. Other PRPs may be named at a later date as information becomes available.

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1. The term PRP as used in this document refers to parties potentially liable for natural resource damages under CERCLA and/or under Part 201 of the Michigan Natural Resources Environmental Protection Act, 1994 PA 451, as amended.

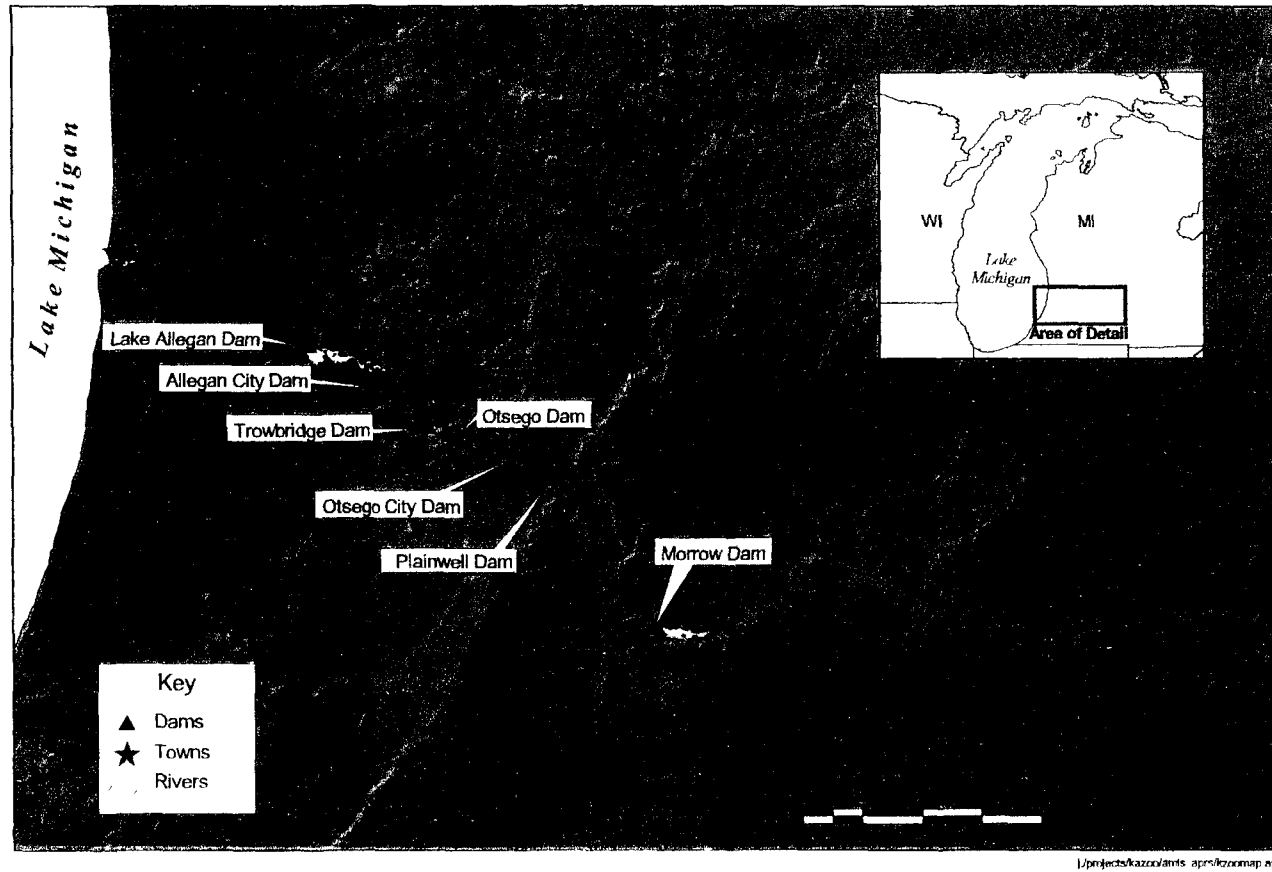


Figure 2.1. Kalamazoo River Environment.

Figure 2.2 shows the general locations of paper mills (or former paper mills) in the Kalamazoo and Plainwell areas. Allied Paper, Inc. facilities include the former Monarch and Bryant mills on Portage Creek in Kalamazoo and the King Mill on Lake Street in Kalamazoo. Georgia-Pacific Corporation facilities include several mills on the bank of the Kalamazoo River in Kalamazoo. Plainwell Inc. facilities include a mill on the bank of the Kalamazoo River in Plainwell. Fort James Corporation facilities include the Paperboard Packaging mill and the KVP Specialty Papers mills in Kalamazoo.

These facilities released PCBs into the KRE through the discharge of wastes produced during the deinking and/or repulping of recycled carbonless copy paper material. PCBs were used as an ink carrier or solvent in carbonless copy paper that was manufactured between 1957 and 1971. The PCBs were used as a solvent for dyes that were encapsulated in small spheres and applied to one side of the paper during the coating process. The walls of the spheres would rupture and release the dye when subjected to pressure. The average PCB content in a sheet of carbonless copy paper was 3.4% by weight (Carr et al., 1977).

The process of deinking and subsequent pulping of the recycled stock resulted in breakage of the spheres that contained the PCBs. These PCBs were then distributed throughout the paper recycling process, including in the waste streams. Some of the PCBs in the carbonless copy paper, however, remained in the recycled pulp and subsequently were incorporated into recycled paper products. For example, PCB concentrations as high as 433 mg/kg were measured in recycled paperboard used for cereal packaging in 1971, the year that PCB use in the manufacturing of carbonless copy paper was discontinued (Carr et al., 1977).

Allied Paper, Georgia-Pacific, and Plainwell Paper Inc. each deinked and repulped recycled carbonless copy paper stock for some period between 1957 and 1971 (the period when PCBs were used in the ink of carbonless copy paper). In addition, the paper recycled by the Kalamazoo-area paper companies most likely continued to contain PCBs for some time after 1971.

Allied Paper deinked carbonless copy paper at two mills: the King Mill until 1965 (the starting date of deinking at this mill is not available), and the Bryant Mill for the entire 15-year period that PCBs were used in the manufacture of carbonless copy paper (1957-1971) (Blasland, Bouck & Lee, 1992). Georgia-Pacific deinked carbonless copy paper at two mills some time during the 1957 to 1971 period when carbonless copy paper contained PCBs (Blasland, Bouck & Lee, 1992). The Simpson Plainwell Paper mill deinked carbonless copy paper from 1957 until 1962 (Blasland, Bouck & Lee, 1992).

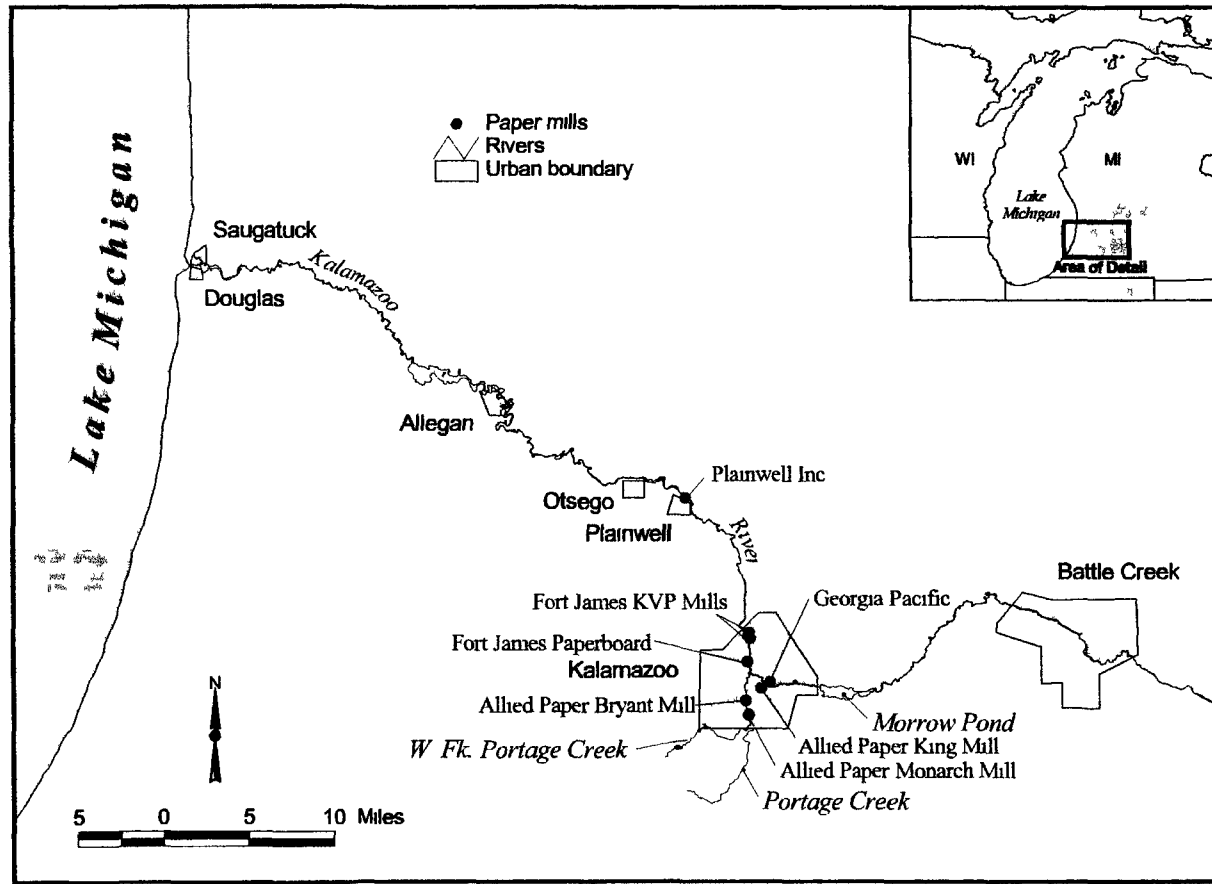


Figure 2.2. Location of PRP paper mill facilities (or former facilities).

The process of deinking and repulping recycled paper produced a substantial quantity of paper waste. Between the mid-1950s and the early 1970s, each of the PRP deinking mills had similar waste treatment systems. Raw paper waste, containing water, clay, and fibrous waste, was pumped to a primary clarifier that separated out much of the settleable solids. The waste from the clarifier included wastewater (effluent) and residual clay and fibrous solids (underflow, or residuals) (Blasland, Bouck & Lee, 1992). However, discharge of untreated waste directly to Portage Creek and the Kalamazoo River also occurred during this (Blasland, Bouck & Lee, 1992).

Typically, the effluent from the clarifier was either recycled through the process systems, discharged to Portage Creek or the Kalamazoo River, or discharged to a municipal wastewater treatment plant (WWTP). The clarifier residuals typically were pumped into dewatering lagoons and allowed to dry by evaporation. The resulting dried residuals, consisting mostly of grey clay and wood fibers, were then removed from the dewatering lagoons and deposited in disposal areas or landfills along Portage Creek and the Kalamazoo River (Blasland, Bouck & Lee, 1992).

Table 2.1 lists PRP facilities where residuals were dewatered or disposed during the period when the waste stream most likely contained PCBs, and includes the maximum PCB concentration that has been measured at each facility. For example, PCB concentrations up to 1,200 mg/kg have been measured in the material at the Bryant historical residual dewatering lagoon along Portage Creek (Blasland, Bouck & Lee, 1992; 1993a). For comparison, PCBs in floodplain soil samples from the Kalamazoo River upstream of PRP facilities ranged from below detection (at detection limits of 0.11 or 0.14 mg/kg) to 0.39 mg/kg (Blasland, Bouck & Lee, 1994a). These data demonstrate that material in the waste stream from the PRP facilities contained elevated concentrations of PCBs.

## **2.3 RI/FS Activities**

A remedial investigation/feasibility study (RI/FS) pursuant to CERCLA (also known as Superfund) is being conducted for the site by MDEQ, U.S. EPA, and the PRPs. The purpose of the RI/FS is to determine the nature and extent of contamination of the site, characterize human health and ecological risks resulting from site contamination, evaluate different alternatives for remediating the site, and selecting the site remedy to address the risks. The RI/FS process and the site remedy are distinct from the site NRDA being conducted by the Trustees. However, the results of the RI/FS remedy selection process influence the NRDA in that the more extensive the PCB cleanup remedy that is conducted, the less NRDA restoration is required. The relationship between RI/FS and NRDA is described in more detail in Section 6.4.

**Table 2.1**  
**PRP facilities where recycled paper waste stream material**  
**was dewatered or disposed**

<b>Facility</b>	<b>Location</b>	<b>Approx. area (hectares)</b>	<b>Approx. area (acres)</b>	<b>Maximum PCB concentration (mg/kg)</b>	<b>Source</b>
Monarch HRDLs <sup>a</sup>	Adjacent to Portage Creek	1	2.47	61	Blasland, Bouck & Lee, 1992; 1993b
Bryant HRDLs <sup>a</sup>	Adjacent to Portage Creek	5	12.36	1,200	Blasland, Bouck & Lee, 1992; 1993b
Bryant Mill Pond	Adjacent to Portage Creek	9	22.24	1,000	Blasland, Bouck & Lee, 1992
A-Site Landfill	Adjacent to the Kalamazoo River in the city of Kalamazoo	9	22.24	148	Blasland, Bouck & Lee, 1992; Swanson Environmental, 1990
Willow Boulevard Landfill	Adjacent to the Kalamazoo River in the city of Kalamazoo	4	9.88	167	Swanson Environmental, 1987
King Highway Landfill	Adjacent to the Kalamazoo River in the city of Kalamazoo	9	22.24	77	Blasland, Bouck & Lee, 1992; 1993a; 1994b
King Mill Lagoons	On Lake Street in the city of Kalamazoo	0.4	0.97	10	Blasland, Bouck & Lee, 1992
12th Street Landfill	Adjacent to the Kalamazoo River in Plainwell	3	7.41	120	Blasland, Bouck & Lee, 1992; Geraghty and Miller, 1994
KVP Type II Landfill	Adjacent to the Kalamazoo River in Parchment	6	14.83	30	STS Consultants, 1989; Williams, 1979
KVP Type III Landfill	Adjacent to the Kalamazoo River in Parchment	10	24.71	(no data available)	STS Consultants, 1989

a. HRDLs = historical residuals dewatering lagoons.

As a result of the PCB releases into the KRE, the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site was added to the National Priorities List (NPL) pursuant to the CERCLA [42 U.S.C. § 9601 *et seq.*, as amended] on August 30, 1990. On December 28, 1990, the State of Michigan entered into an Administrative Order by Consent (hereafter referred to as the Order) with Allied Paper, Inc. and its parent company, Millennium Holdings, Inc. (formerly HM Holdings); the Georgia-Pacific Corporation; and Plainwell Inc. (formerly the Simpson Plainwell Paper Company). Pursuant to the Order, these companies are undertaking a remedial investigation/feasibility study (RI/FS). In addition, the Fort James Corporation (formerly the James River Corporation) is participating in the RI/FS, although it is not a party to the Order. The Allied Paper, Inc./Portage Creek/Kalamazoo River NPL Site includes Portage Creek from Cork Street just above the Bryant Mill Pond in the city of Kalamazoo to its confluence with the Kalamazoo River, and the Kalamazoo River from this confluence downstream to the Allegan City Dam. In total, the initial area under investigation included a 5-km (3-mile) stretch of Portage Creek and a 56-km (35-mile) stretch of the Kalamazoo River.

However, the MDNR expanded the RI to address the Kalamazoo River from Morrow Pond Dam to the mouth of the Kalamazoo River at Lake Michigan [approximately 130 km (80 miles)], as well as Portage Creek from Cork Street to its confluence with the Kalamazoo River [5 km (3 miles)]. In addition, the section of the Kalamazoo River from the Morrow Pond Dam to Lake Michigan is an International Joint Commission Area of Concern.<sup>2</sup>

Work on the RI/FS is ongoing. Records of Decision or proposed plans have been produced for the King Highway Landfill and 12th Street Landfill, and interim response actions have been conducted at the Willow Boulevard/A-Site and the King Mill Lagoons site. In addition, the U.S. EPA and their contractors conducted a time-critical removal cleanup action at the Bryant Mill Pond of Portage Creek beginning in October 1998. The action included removal of PCB-contaminated paper residuals from the creek bed and former impoundment area, and placement of the excavated material on site in the Historic Residual Dewatering Lagoon and the Former Residuals Dewatering Lagoons. Further interim response actions to stabilize the waste that was relocated during the removal action are still in progress.

The Draft RI/FS Report for the Kalamazoo River from Morrow Dam to the Lake Allegan Dam (Calkins Dam) was received by MDEQ on October 30, 2000. An additional RI for the lower reach of the river, from Calkins Dam to Lake Michigan, is expected after additional investigation work in the area, including sampling of sediment and floodplain soil, has been completed.

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2. Pursuant to the Great Lakes Water Quality Agreement of 1978 (as amended) between the United States and Canada, the International Joint Commission has identified 43 Areas of Concern throughout the Great Lakes where beneficial uses and/or the ability to support aquatic life is impaired by pollutants (International Joint Commission, 1989).

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## **3. Authority of Trustees and Decision to Proceed with a Type B Assessment**

### **3.1 Authority**

Natural resources subject to state and federal trusteeship, and which have been or are likely to have been adversely affected by the releases of hazardous substances, include surface water, sediments, groundwater, soils, and biological resources, including aquatic biota and wildlife.

Under Section 107 (f) of CERCLA, the Trustees, individually and together, are authorized to recover damages for injury to, destruction of, and loss of natural resources resulting from a release of hazardous substances from a facility. The Trustees will coordinate and cooperate in carrying out their trustee responsibilities as suggested under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP): where there are multiple trustees, because of coexisting or contiguous natural resources or concurrent jurisdictions, they should coordinate and cooperate in carrying out their trustee responsibilities [40 CFR § 300.615].

Under the DOI regulations, assessment plans must include a statement of the authority for asserting trusteeship or cotrusteeship for those natural resources within the Assessment Plan [43 CFR § 11.31(a)(2)]. A general description of the natural resource authority asserted by the Trustees is given below. These descriptions are not meant to be an exhaustive and all inclusive listing of their authority over Trustee natural resources. In addition, each Trustee may have co-trustee authority over natural resources listed within the trusteeship of another Trustee.

#### **3.1.1 Michigan Departments of Environmental Quality and Attorney General Natural Resource Trusteeship Authority**

The MDEQ is responsible for administering environmental regulatory programs for the State of Michigan. The Michigan Department of Attorney General is responsible for enforcing environmental laws within the State of Michigan. Pursuant to Section 20126a(1)(c) of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), as well as Section 3115(2) of Part 31, Water Resources Protection, of NREPA, persons who are liable are jointly and severally liable for the full value of injuries to natural resources. The Director of the MDEQ and the Attorney General of the State of Michigan have also been designated by Michigan Governor John Engler as Trustee and Co-Trustee, respectively, for state natural resources pursuant to Section 107(f)(2)(B) of CERCLA

[42 U.S.C. §§ 9601 *et seq.*] and Section 311 of the Federal Water Pollution Control Act of 1972, as amended (Clean Water Act) [33 U.S.C. §§ 1251 *et seq.*].

### **3.1.2 U.S. Department of the Interior and U.S. Department of Commerce Natural Resource Trusteeship Authority**

CERCLA and the Clean Water Act authorize the President to recover, on behalf of the public, damages for injuries to natural resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States [42 U.S.C. §§ 9607(f)(1), 9601(16); 33 U.S.C. § 1321(f)(5)]. The President has designated federal natural resource trustees in the NCP [40 CFR § 300.600]. The NCP states that federal natural resource trusteeship extends to resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by (referred to as “managed or controlled”) by the United States, including supporting ecosystems resources [40 CFR § 300.600].

The Secretary of the Interior acts as Trustee for natural resources managed or controlled by the U.S. DOI, including their supporting ecosystems [40 CFR § 300.600(b), (b)(2), and (b)(3)]. The statutory bases for U.S. DOI’s trusteeship include, but are not limited to, the Migratory Bird Treaty Act (16 U.S.C. § 703 *et seq.*), the Bald Eagle Protection Act (16 U.S.C. § 668 *et seq.*), the Fish and Wildlife Coordination Act (16 U.S.C. § 661 *et seq.*), and the Clean Water Act (33 U.S.C. § 1251 *et seq.*).

The Secretary of Commerce acts as Trustee for natural resources managed or controlled by the U.S. Department of Commerce (DOC), including their supporting ecosystems. [40 CFR § 300.600(b), (b)(1)]. The Secretary of DOC has delegated his authority to act as trustee to the Administrator of the National Oceanic and Atmospheric Administration (NOAA) [DOO 15-10 § 3.01 (mm)]. Pursuant to this delegation, NOAA has trusteeship for the natural resources in the KRE and Lake Michigan. Pursuant to the Great Lakes Critical Programs Act of 1990 [33 U.S.C. § 1268] (Great Lakes Act), and the Great Lakes Water Quality Agreement of 1978, as amended by the Water Quality Agreement of 1987 (Great Lakes Water Quality Agreement), the United States, in part through the Commerce Department, manages and/or controls the water and sediments of the Great Lakes System. The water and sediments of the Kalamazoo River and Lake Michigan fall within the Great Lakes System.

## **3.2 Decision to Perform a Type B Assessment**

Trustees can use Type A or a Type B NRDA procedures [43 CFR § 11.33]. Type A procedures are simplified procedures that require minimal field observation [43 CFR § 11.33(a)]. A Type B assessment provides alternative methodologies for conducting NRDA and consists of three

phases: injury determination, injury quantification, and damage determination [43 CFR § 11.60(b)].

Hazardous substances have been released or re-released in the assessment area for over 30 years. Hazardous substances have been transmitted through the food chain, affecting many different trophic levels. Consequently, the releases cannot be considered of a short duration, minor, or resulting from a single event. Further, the spatial and temporal extent and the heterogeneity of exposure conditions and potentially affected resources are not suitable for application of the simplifying assumptions and averaged data and conditions contained in Type A procedures. Therefore, simplified Type A assessment methodologies would be inappropriate for this NRDA.

The Trustees have determined (1) that the Type A assessment is not appropriate for the long-term, spatially, and temporally complex nature of releases and exposures to hazardous substances characteristic of the assessment area; (2) that substantial site-specific data already exist to support the assessment; and (3) that additional site-specific data can be collected at reasonable cost (if required as part of a Stage II assessment). As a result, the Trustees have concluded that the use of Type B procedures is justified.

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## 4. Confirmation of Exposure and Recovery Period

The DOI NRDA regulations state that the assessment plan should confirm that:

at least one of the natural resources identified as potentially injured in the preassessment screen has in fact been exposed to the . . . hazardous substance [43 CFR § 11.34(a)(1)].

A natural resource has been exposed to a hazardous substance if “all or part of [it] is, or has been, in physical contact with . . . a hazardous substance, or with media containing the . . . hazardous substance” [43 CFR § 11.14(q)]. The DOI regulations also state that “whenever possible, exposure shall be confirmed using existing data” from previous studies of the assessment area [43 CFR § 11.34(b)(1)]. In addition to confirming exposure according to the definition of exposure in the DOI regulations, the Stage I Assessment Plan also provides a comparison of PCB concentrations in natural resources downstream of PRP facilities that are known to have released PCBs to concentrations upstream of these facilities. This comparison is provided for illustrative purposes.

The following sections provide confirmation of exposure, based on a review of the available data, for a number of the potentially injured resources within the KRE Assessment Area, including:

- ▶ surface water resources, including surface water and sediments
- ▶ groundwater resources
- ▶ geologic resources
- ▶ biological resources, including benthic macroinvertebrates, fish, and wildlife.

The following discussion provides examples of information sufficient to confirm exposure of surface water/sediment, groundwater, geologic, and biological resources to PCBs in the KRE. It is not a complete review of existing information regarding KRE resource exposure to PCBs.

A preliminary determination of the recovery period for KRE natural resources is also presented in this chapter.

## 4.1 Surface Water/Sediment Resources

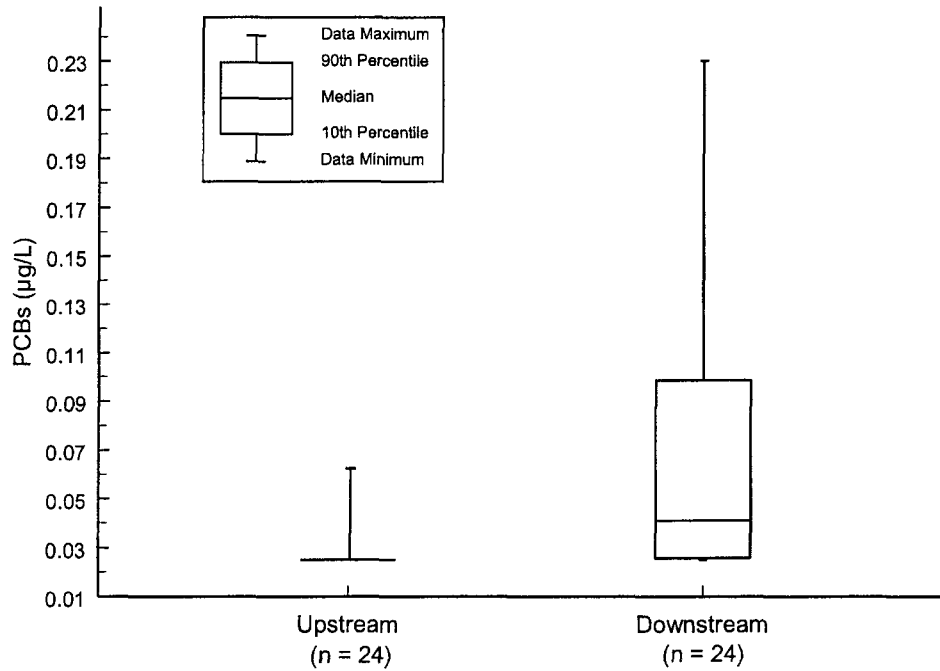
Surface water resources are defined in the DOI regulations as including both surface water and sediments suspended in water or lying on the bank, bed, or shoreline [43 CFR § 11.14(pp)]. Available data on PCB concentrations in surface water and sediment document that these resources are exposed to PCBs in the KRE. PCBs have been measured in Portage Creek and the Kalamazoo River downstream of PRP facilities at concentrations much higher than those measured upstream of PRP facilities.

For example, PCB concentrations measured in Portage Creek surface water in 1993 (before the emergency removal action) by Blasland, Bouck & Lee (2000) were much higher downstream of Allied Paper facilities than those measured upstream (Figure 4.1). Upstream of the facilities, PCBs were detected in only 1 of the 24 surface water samples analyzed at a detection limit of 0.05 µg/L. Downstream of the facilities (at Alcott Street), PCBs were detected in 21 of the 24 samples analyzed and measured up to 0.23 µg/L.

Surface water samples collected between 1985 and 1987 by MDNR in Portage Creek showed a similar pattern. PCBs were detected above the study's 0.01 µg/L detection limit in all 27 downstream samples; concentrations were measured as high as 0.33 µg/L (MDNR, 1987b; Figure 4.2). In contrast, upstream of Allied Paper facilities, only 1 of the 25 samples collected contained PCBs at a detectable concentration (0.02 µg/L).

PCB concentrations measured between 1985 and 1987 in Kalamazoo River surface water show a similar pattern between areas upstream and downstream of PRP facilities (MDNR, 1987b; Blasland, Bouck & Lee, 1992). In general, concentrations of PCBs in Kalamazoo River surface water increase with distance downstream of PRP facilities (Figure 4.3). The minimum values were not detected at a detection limit of 0.01 µg/L and are represented in Figure 4.3 as one-half the detection limit.

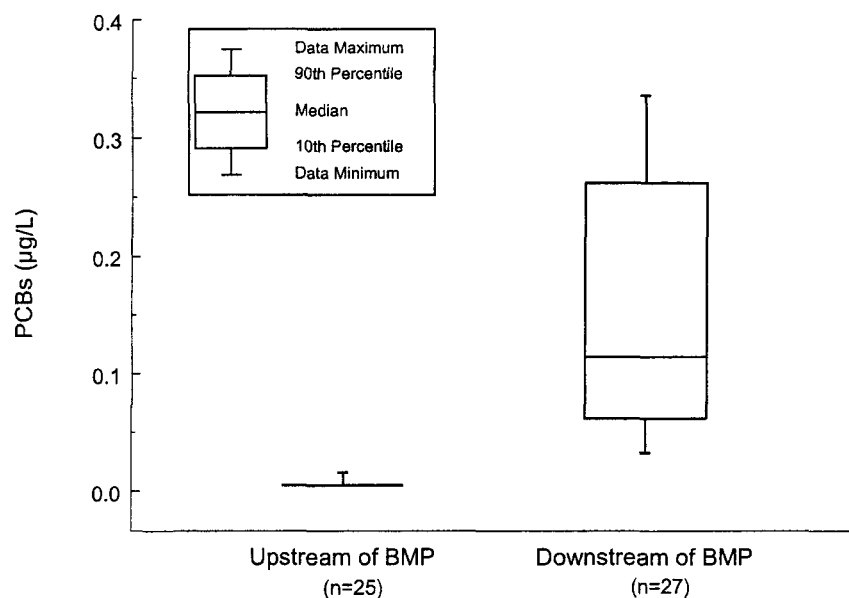
PCB concentrations are also elevated in bed sediments of Portage Creek and the Kalamazoo River. Numerous studies measured elevated PCB concentrations in Portage Creek sediment downstream of the Allied Paper facilities (Michigan Water Resources Commission 1973; MDNR 1983, 1984, 1987b; Limno-Tech, 1987; GZA/Donahue, 1990; Blasland, Bouck & Lee, 1992, 1994c). PCB concentrations in sediment samples collected at and downstream of the former Bryant Mill Pond before the emergency removal are one to two orders of magnitude greater than concentrations at upstream locations (Figure 4.4).



**Figure 4.1. Surface water PCB concentrations in Portage Creek upstream (at Cork Street) and downstream (at Alcott Street) of Allied Paper facilities, in 1993.**

Samples reported as not detected are plotted at one-half the detection limit of 0.05 µg/L; reported values less than 0.05 µg/L were qualified as “estimated” by the analytical laboratory.

Source: Blasland, Bouck & Lee, 2000.

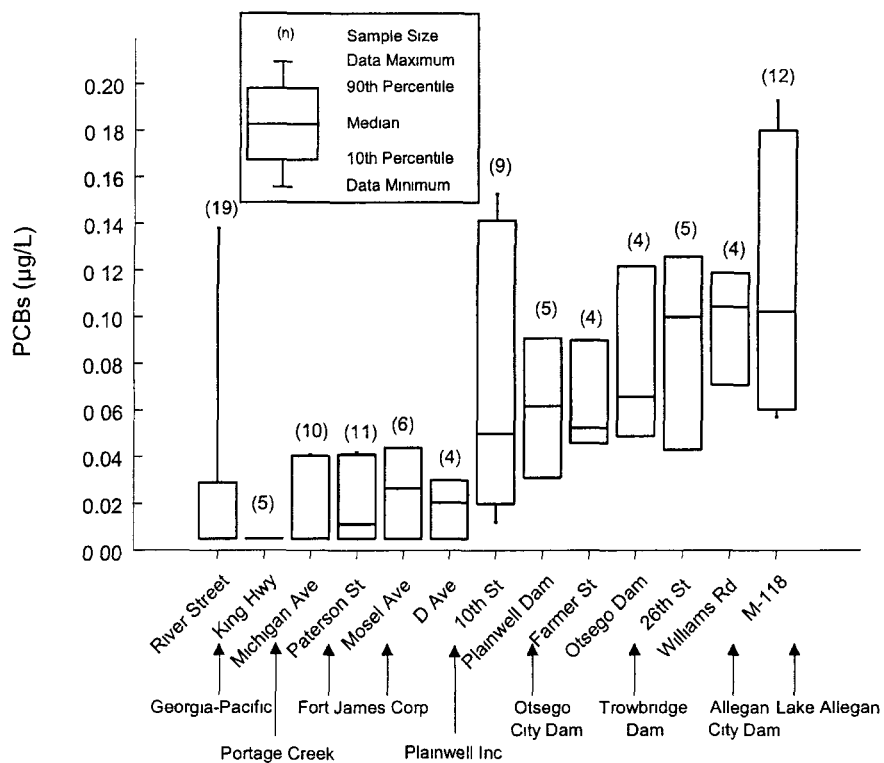


**Figure 4.2. Surface water PCB concentrations in Portage Creek upstream (at Cork Street) and downstream (at Alcott Street) of Allied Paper facilities, 1985-1987.**

BMP = former Bryant Mill Pond.

Samples reported as not detected are plotted at one-half the detection limit of  $0.05 \mu\text{g/L}$ ; reported values less than  $0.05 \mu\text{g/L}$  were qualified as “estimated” by the analytical laboratory.

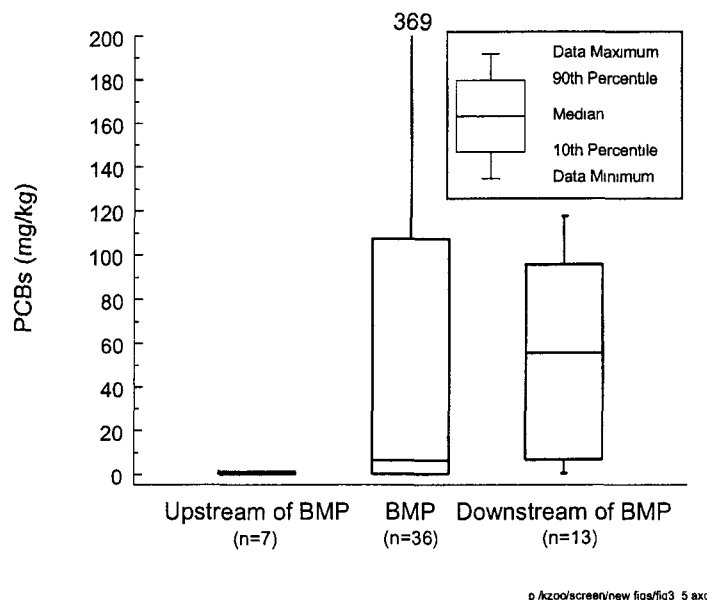
Source: MDNR, 1987a.



**Figure 4.3. PCB concentrations in Kalamazoo River surface water, 1985-1987.**

Downstream is to the right.

Source. MDNR, 1987a.

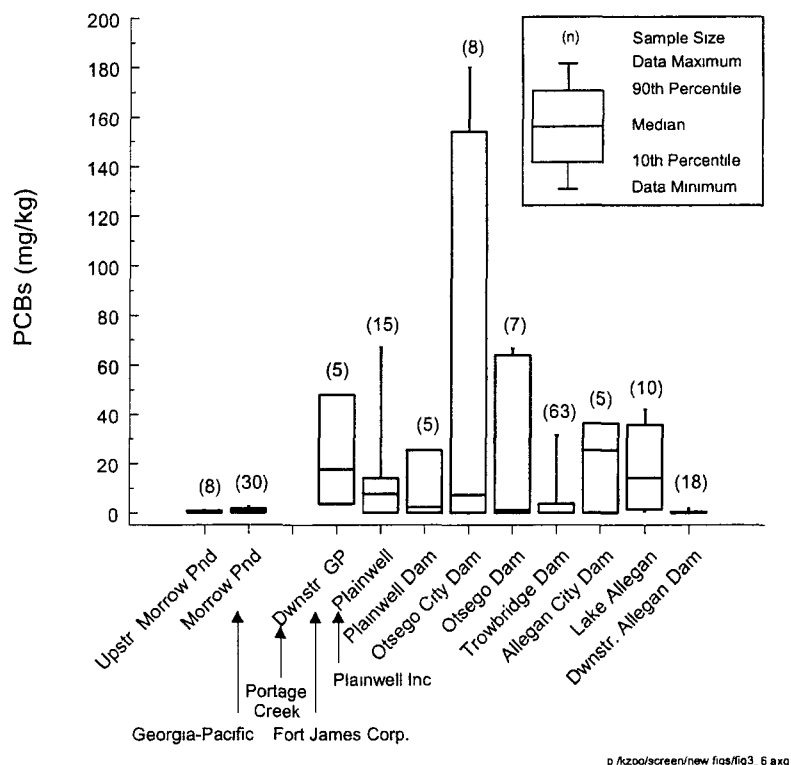


**Figure 4.4. PCB concentrations in Portage Creek surficial sediments.**

Data for all sampling years and investigations are pooled. BMP = former Bryant Mill Pond. The y-axis is cut off at 200 mg/kg, and the “369” represents the maximum concentration in BMP sediments. See text for data sources.

Studies conducted between 1976 and 1993 measured elevated PCB concentrations in Kalamazoo River sediments (Bhaskar et al., 1983; MDNR, 1983, 1986, 1987a, 1990, 1991; Horvath, 1984; GZA/Donahue, 1988, 1990; Environmental Resources Management, 1989; FTC&H 1991; Blasland, Bouck & Lee, 1992, 1994c). PCB concentrations in sediment samples collected at and downstream of PRP facilities are one to two orders of magnitude greater than concentrations upstream (Figure 4.5).

In summary, elevated PCB concentrations have been measured in surface waters and sediment of the KRE Assessment Area. PCB concentrations measured downstream of PRP facilities that have released PCBs are higher than concentrations measured upstream of the facilities. These data confirm that the KRE surface water resource has been exposed to PCBs.



**Figure 4.5. PCB concentrations in Kalamazoo River sediments.**

Data for all sampling years and investigations are pooled. Morrow Pond is upstream of paper company facilities. GP = Georgia-Pacific facilities. See text for data sources.

## 4.2 Groundwater Resources

Groundwater is defined in the DOI regulations as “water in a saturated zone or stratum beneath the surface of land or water and the rocks and sediment through which ground water moves” [43 CFR § 11.14(t)]. PCB concentrations in groundwater underlying PRP facilities near Portage Creek were all above detection and ranged from 0.10 to 2.1  $\mu\text{g/L}$  (Table 4.1). Upgradient of the Allied Paper facilities, no PCBs were measured above the detection limit of 0.01  $\mu\text{g/L}$  (MDNR, 1987a). These data show that groundwater in the KRE Assessment Area has been exposed to PCBs.

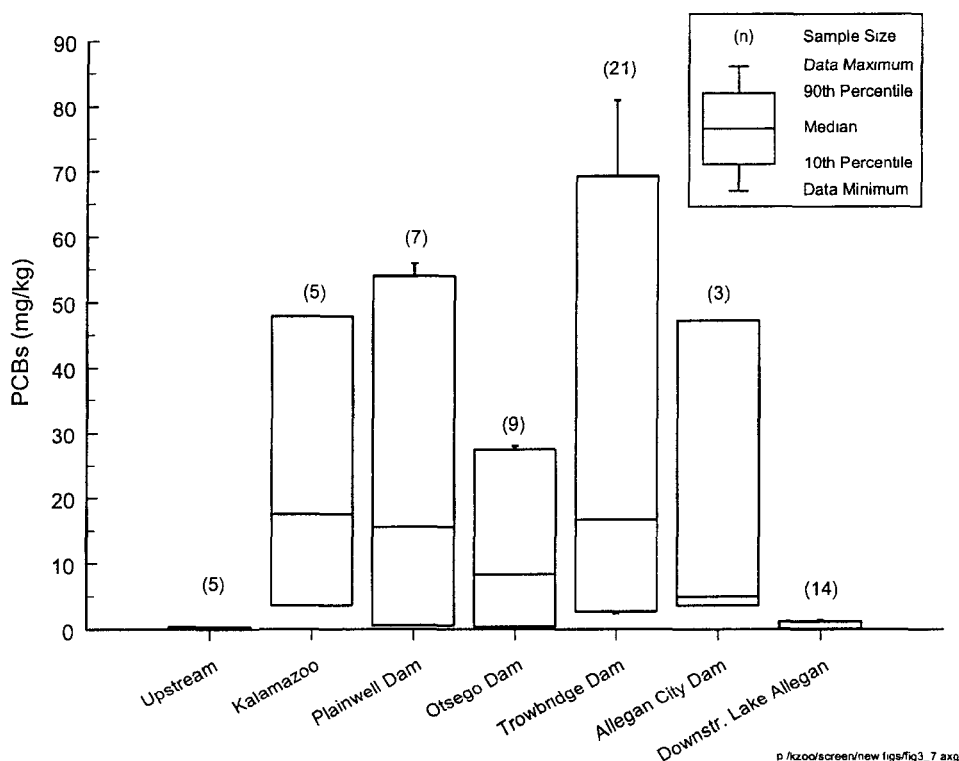
**Table 4.1**  
**Example PCB concentrations in groundwater underlying**  
**Allied Paper Portage Creek facilities**

Location	PCB concentration (µg/L)	Source
<b>Background</b>		
Upgradient of Allied Paper	<0.01	MDNR, 1987b
<b>Allied Paper Facilities</b>		
Outside Type III landfill, adjacent to Portage Creek	0.52 0.56	MDNR, 1987b
Northeast of Bryant HRDL, ~100 feet from Portage Creek	0.35 0.10	Blasland, Bouck & Lee, 1992
East of Bryant HRDL, ~100 feet from Portage Creek	0.13	
East of Bryant HRDL, ~20 feet from Portage Creek	0.37	
North of Bryant Clarifier, ~150 feet from Portage Creek	2.1	
	1.7	
	1.4	
	0.76 3.3	

### 4.3 Geologic Resources

Geologic resources are defined in the DOI regulations as “those elements of the Earth’s crust such as soils, sediments, rocks, and minerals . . . that are not included in the definitions of ground and surface water resources” [43 CFR § 11.14(s)]. The geologic resources of the KRE include the extensive floodplain soils along Portage Creek and the Kalamazoo River. Some of these soils are located immediately upstream of several of the dams on the Kalamazoo River and consist largely of former sediments that were deposited behind the dams, then exposed when the dams were decommissioned and partially removed (Blasland, Bouck & Lee, 1992). These areas include the former Bryant Mill Pond impoundment on Portage Creek, and the Plainwell, Otsego, and Trowbridge former impoundments on the Kalamazoo River (Blasland, Bouck & Lee, 1992). These floodplain soils exposed by partial dam removal comprise approximately 200 hectares (530 acres) in the KRE (Blasland, Bouck & Lee, 1992).

PCB concentrations up to 55.9 mg/kg, 28 mg/kg, and 81 mg/kg have been measured in floodplain soils from the former Kalamazoo River impoundments of Plainwell, Otsego, and Trowbridge, respectively (MDNR, 1983; 1987b) (Figure 4.6). PCB concentrations in floodplain soils upstream of PRP facilities ranged from below detection (at a detection limit of 0.11 mg/kg) to 0.39 mg/kg (Blasland, Bouck & Lee, 1994a). Elevated PCB concentrations have also been measured in floodplain soils in the city of Kalamazoo (Environmental Resources Management, 1989). These data provide evidence that the floodplain soils of the KRE are exposed to PCBs at elevated concentrations.



**Figure 4.6. PCB concentrations in Kalamazoo River floodplain soils, 1983-1993.**

Downstream is to the right.

Sources: MDNR, 1983; 1987b; Environmental Resources Management, 1989; Blasland, Bouck & Lee, 1992, 1994a.

In summary, elevated PCB concentrations have been measured in floodplain soil samples collected from multiple locations in the KRE Assessment Area. These PCB concentrations are higher than concentrations measured in upstream or upgradient locations and confirm that geologic resources have been exposed to PCBs in the KRE Assessment Area.

## 4.4 Biological Resources

Biological resources are defined in the DOI regulations as “those natural resources referred to in section 101(16) of CERCLA as fish and wildlife and other biota. Fish and wildlife include marine and freshwater aquatic and terrestrial species; game, nongame, and commercial species; and threatened, endangered, and State sensitive species. Other biota encompass shellfish, terrestrial and aquatic plants, and other living organisms” [43 CFR § 11.14(s)]. Data confirming the exposure of KRE biological resources to PCBs are available for fish, birds, invertebrates, and mammals.

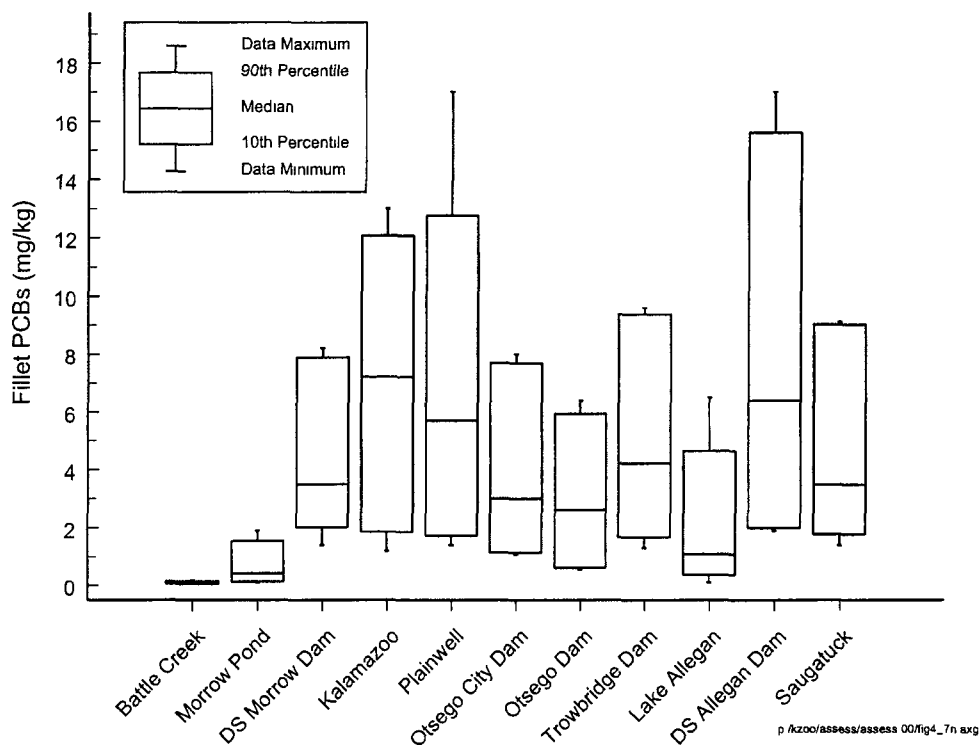
### 4.4.1 Fish

In 1993, as part of RI/FS activities, Blasland, Bouck & Lee (1994a) measured PCB concentrations in skinless carp (*Cyprinus carpio*) fillets and skin-on smallmouth bass (*Micropterus dolomieu*) fillets from 11 locations along the Kalamazoo River. Eleven specimens of each species were collected from each location. PCB concentrations in the skinless carp fillets were an order of magnitude higher in samples from the 80 miles of river downstream of PRP facilities than in samples from upstream locations (Figure 4.7). Similarly, PCB concentrations in skin-on smallmouth bass fillets were also elevated downstream of paper company facilities compared to upstream (Figure 4.8).

Other data on fish fillet PCB concentrations also provide evidence of PCB exposure to fish in the KRE Assessment Area. Data collected for fish in the Kalamazoo River from 1971, and between 1983 and 1987, show elevated PCB concentrations in carp, northern pike (*Esox lucius*), white sucker (*Catostomus commersoni*), largemouth bass (*Micropterus salmoides*), smallmouth bass, black crappie (*Pomoxis nigromaculatus*), bluegill (*Lepomis macrochirus*), channel catfish (*Ictalurus punctatus*), rock bass (*Ambloplites rupestris*), rainbow trout (*Salmo gairdneri*), walleye (*Stizostedion vitreum*), and yellow perch (*Perca flavescens*) (Table 4.2).

### 4.4.2 Birds

PCBs have been measured in birds collected from the KRE Assessment Area. Elevated PCB concentrations have been measured in the edible tissue of various duck species (*Anas* spp.) (MDNR, 1987b; MDPH, 1990; Blasland, Bouck & Lee, 1992). Table 4.3 shows lipid-normalized



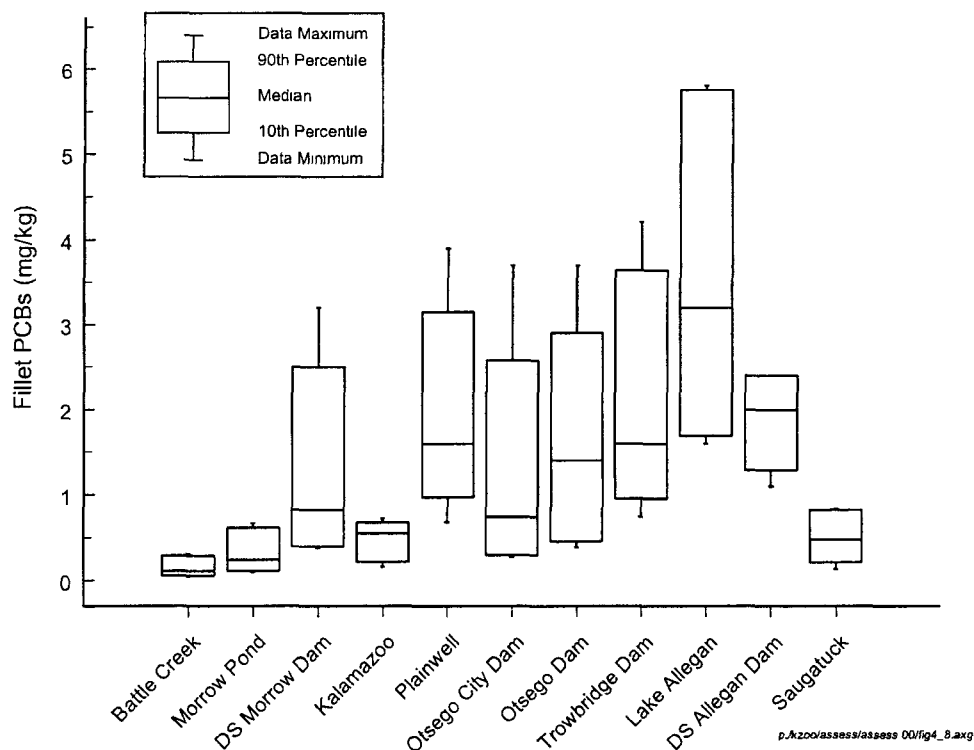
**Figure 4.7. PCB concentrations in Kalamazoo River skinless carp fillets, 1993.**

Downstream is to the right. Battle Creek and Morrow Pond locations are upstream of PRP facilities. Sample size at all sites is 11 carp.

Source: Blasland, Bouck & Lee, 1994a.

PCB concentrations measured in tissues of 15 mallards (*Anas platyrhynchos*), two wood ducks (*Aix sponsa*), a merganser (*Mergus spp.*), a Canada goose (*Branta canadensis*), and a blue-winged teal (*Anas discors*) collected in the KRE Assessment Area. Concentrations (normalized for lipid content of the tissue) up to 700 mg/kg lipid were measured in these birds.

Elevated concentrations of PCBs have also been measured in bird eggs collected from the KRE Assessment Area. Elevated PCB concentrations have been measured in bald eagle (*Haliaeetus leucocephalis*) and great blue heron (*Ardea herodias*) eggs (Table 4.4) and in great horned owl (*Bubo virginianus*) and red-tailed hawk (*Buteo jamaicensis*) eggs (Table 4.5). For example, a PCB concentration of 102 mg/kg was measured in a bald eagle egg collected in 1994 (Table 4.4) and of 90.8 mg/kg in a great horned owl egg collected in 1993 (Table 4.5).



**Figure 4.8. PCB concentrations in Kalamazoo River skin-on smallmouth bass fillets, 1993.**

Downstream is to the right. Battle Creek and Morrow Pond locations are upstream of PRP facilities. Sample size at all sites is 11 bass.

Source: Blasland, Bouck & Lee, 1994a.

#### 4.4.3 Terrestrial invertebrates

Exposure of KRE terrestrial invertebrates to PCBs has been confirmed by measurement of PCBs in earthworms. PCB concentrations are elevated in earthworms collected from floodplains downstream of PRP paper facilities compared to those collected in Battle Creek, upstream of the facilities (Blasland, Bouck & Lee, 1994a). No PCBs were detected (at detection limits ranging from 0.05 to 0.25 mg/kg) in any of the three composite samples of earthworms collected from floodplain soils upstream of PRP facilities (Table 4.6). Downstream of PRP facilities, PCBs were detected in 100% of the earthworms sampled, at concentrations up to 3.2 mg/kg.

**Table 4.2**  
**Summary of historical data on Kalamazoo River fish fillet**  
**PCB concentrations downstream of PRP facilities**

Sample year	Species	n	Minimum PCB concentration (mg/kg)	Mean PCB concentration (mg/kg)	Maximum PCB concentration (mg/kg)
1971	Carp	12	0.2	29.5	164.6
	Northern pike	7	0.1	6.9	17.6
	White sucker	11	<0.1	17.0	56.9
1983	Carp	26	<0.9	4.0	15.9
1984	Carp	11	1.0	8.5	25.7
1985	Carp	109	<0.1	4.0	14.0
	Largemouth bass	19	0.5	2.0	6.5
	Smallmouth bass	11	0.8	1.7	3.3
1986	Carp	165	<0.1	4.1	27.4
	Largemouth bass	5	<0.1	0.6	1.1
1987	Black crappie	10	0.3	0.7	1.6
	Bluegill	10	0.2	0.4	0.7
	Channel catfish	8	3.5	6.4	12.4
	Carp	47	0.1	2.7	17.1
	Largemouth bass	11	<0.1	1.0	2.0
	Northern pike	14	0.3	1.5	3.4
	Rock bass	10	0.2	0.4	0.5
	Rainbow trout	10	0.2	0.4	0.7
	Smallmouth bass	21	<0.1	1.8	5.1
	Walleye	10	0.3	0.6	1.5
	White sucker	10	0.4	1.1	2.8
	Yellow perch	10	0.1	0.4	1.2

n = number of samples.

Source: MDNR, 1992; Michigan Water Resources Commission, 1972.

#### 4.4.4 Mammals

PCB concentrations have been measured in white-footed mice (*Peromyscus leucopus*) collected from floodplain soils upstream and downstream of PRP facilities (Blasland, Bouck & Lee, 1994a). Upstream of PRP facilities, PCBs were not detected in any of the 10 mice collected, at detection limits ranging from 0.011 to 0.098 mg/kg. At the downstream locations, PCBs were detected in 70% to 100% of the mice collected at concentrations up to 0.45 mg/kg (Table 4.7).

**Table 4.3**  
**PCB concentrations (fat basis) in KRE ducks and geese**

Location	Species	Measured PCB concentration (mg/kg lipid)	Source
Morrow Pond (upstream of paper companies)	Merganser	700	MDNR, 1987b
Otsego City Dam Impoundment	Mallard	68	Blasland, Bouck & Lee, 1992
	Mallard	65	
	Blue-winged teal	9.6	
Former Trowbridge Impoundment	Mallard	68	Blasland, Bouck & Lee, 1992
	Mallard	73	
Lake Allegan	Wood duck	36.6	Blasland, Bouck & Lee, 1992
	Canada goose	6.4	
Pottawatamie Marsh	Mallard	1.8	MDPH, 1990
	Mallard	7.7	
Saugatuck	Mallard	11.8	MDNR, 1987b
	Mallard	9.3	
	Mallard	7.1	
	Mallard	10.7	
	Mallard	23.0	
	Mallard	11.9	
	Mallard	48.7	
	Wood duck	2.7	
	Mallard	30.3	
	Mallard	36.3	

PCB concentrations have also been measured in mink (*Mustela vison*) collected from the KRE Assessment Area. In 1993, the MDNR collected 10 mink from five locations along the Kalamazoo River and analyzed each of the carcasses and livers for PCBs (CDM, 1993; Roy F. Weston Inc., 1994). At the location upstream of PRP facilities, PCB concentrations ranged from 1.9 to 6.5 mg/kg in carcasses and 1.2 to 6.0 mg/kg in livers. In contrast, PCB concentrations were as high as 16 mg/kg in carcasses and 52 mg/kg in livers downstream of PRP facilities (Table 4.8).

In 1994, the MDNR collected muskrat (*Ondatra zibethaca*) from five locations along the Kalamazoo River: one upstream of Battle Creek and four downstream of paper company facilities (Roy F. Weston Inc., 1994). Six muskrat were trapped at each location. PCBs were not detected in the carcass or liver of any of the muskrat collected from the upstream location,

**Table 4.4**  
**PCB concentrations in KRE bald eagle and great blue heron eggs**

Species	Collection year	Collection location	PCB concentration (mg/kg wet weight)	Source
Great blue heron	1993	Ottawa Marsh	1.48	Mehne, 1994
			2.3	
			2.31	
			4.74	
			7.67	
			44.38	
Bald eagle	1994	Ottawa Marsh	102	D. Best, U.S. Fish and Wildlife Service, pers. comm., 1997
Bald eagle	1996	Allegan State Game Area	53.34	D. Best, U.S. Fish and Wildlife Service, pers. comm., 2000
			31.68	

**Table 4.5**  
**PCB concentrations in KRE great horned owl and red-tailed hawk eggs**

Species	Collection year	Collection location	PCB concentration (mg/kg wet weight)
Great horned owl	1993	Allegan State Game Area	90.8
	1994	Allegan State Game Area	15.9
Red-tailed hawk	1993	Allegan State Game Area	2.3
	1994	Allegan State Game Area	4.5
	1994	Allegan State Game Area	27.1
Source: Mehne, 1994.			

at detection limits ranging from 0.12 to 0.59 mg/kg (Table 4.9). PCB concentrations were up to 8.4 mg/kg in muskrat carcasses and up to 3.8 mg/kg in muskrat livers from locations downstream of PRP facilities (Table 4.9).

In summary, elevated PCB concentrations have been measured in KRE biological resources, including fish, birds, terrestrial invertebrates, and mammals. Data demonstrate that PCB concentrations in biological resources are higher downstream of PRP facilities than upstream.

<b>Table 4.6</b> <b>PCB concentrations in earthworms from Kalamazoo River floodplains</b>			
<b>Location</b>	<b>Number of samples</b>	<b>Median (mg/kg wet weight) (range)</b>	<b>% Detect</b>
Battle Creek (upstream of paper companies)	3	nd	0%
Former Plainwell Impoundment	3	0.59 (0.13-0.66)	100%
Downstream of Otsego Dam	3	2.2 (1.3-2.2)	100%
Former Trowbridge Impoundment	3	2.5 (2.1-3.2)	100%
Lake Allegan Dam	3	0.024 (0.23-0.25)	100%
nd = Not detected at detection limits ranging from 0.05 to 0.25 mg/kg wet weight.			
Source: Blasland, Bouck & Lee, 1994a.			

<b>Table 4.7</b> <b>PCB concentrations in whole-body white-footed mice collected from Kalamazoo River floodplains</b>			
<b>Location</b>	<b>Number of samples</b>	<b>Median<sup>a</sup> (mg/kg wet weight) (range)</b>	<b>% Detect</b>
Battle Creek (upstream of paper companies)	10	nd	0%
Former Plainwell Impoundment	10	0.11 (nd-0.28)	70%
Downstream of Otsego Dam	10	0.28 (0.089-0.38)	100%
Former Trowbridge Impoundment	10	0.115 (nd-0.45)	80%
Lake Allegan Dam	10	0.036 (nd-0.35)	80%
a. Median of detected concentrations.			
nd = Not detected at detection limits ranging from 0.011 to 0.098 mg/kg wet weight.			
Source: Blasland, Bouck & Lee, 1994a.			

**Table 4.8**  
**PCB concentrations in KRE mink**

Location	Number of samples	Median (mg/kg dry weight) (range)	% Detect
<b>Mink carcass</b>			
Battle Creek (upstream of paper companies)	5	3.0 (1.9-6.5)	100%
Former Plainwell Impoundment	1	7.6	100%
Former Trowbridge Impoundment	2	13.5 (11.0-16.0)	100%
Lake Allegan Dam	2	8.6 (5.2-12.0)	100%
<b>Mink liver</b>			
Battle Creek (upstream of paper companies)	5	3.3 (1.2-6.0)	100%
Former Plainwell Impoundment	1	11.0	100%
Former Trowbridge Impoundment	1	7.5	100%
Lake Allegan Dam	2	30.5 (9.0-52.0)	100%
Source: Roy F. Weston Inc., 1994.			

## 4.5 Recovery Period

This section provides a preliminary determination of the recovery period for the exposed natural resources of the assessment area [43 CFR § 11.31(a)(2)]. This preliminary determination can serve as a means of evaluating whether the approach proposed for assessing the injuries and damages in Chapters 5 and 6 is likely to be cost-effective [43 CFR § 11.31(a)(2)]. This preliminary determination is based on existing literature and data.

A recovery period is defined as either the longest length of time required to return the services of the injured resource to their baseline condition, or a lesser period of time selected by the Trustees and documented in the Assessment Plan [43 CFR § 11.14(gg)]. Services are defined as the

**Table 4.9**  
**PCB concentrations in KRE muskrat**

<b>Location</b>	<b>Number of samples</b>	<b>Median (mg/kg dry weight) (range)</b>	<b>% Detect</b>
<b>Muskrat carcass</b>			
Battle Creek (upstream of paper companies)	6	nd	0%
Former Plainwell Impoundment	6	1.0 (0.081-2.0)	100%
Former Otsego Impoundment	6	0.46 (0.14-0.99)	100%
Former Trowbridge Impoundment	6	0.58 (0.28-8.4)	100%
Lake Allegan Dam	6	1.9 (nd-3.1)	83%
<b>Muskrat liver</b>			
Battle Creek (upstream of paper companies)	6	nd	0%
Former Plainwell Impoundment	6	0.93 (0.12-2.6)	100%
Former Otsego Impoundment	6	0.40 (0.12-1.0)	100%
Former Trowbridge Impoundment	5 <sup>a</sup>	1.4 (0.23-3.8)	100%
Lake Allegan Dam	6	1.4 (0.33-1.9)	100%
nd = Not detected at detection limits ranging from 0.12 to 0.59 mg/kg.			
a. One muskrat liver sample from this location was lost in processing.			
Source: Roy F. Weston Inc., 1994.			

physical and biological functions performed by the resource, including the human uses of those functions. These services are the result of the physical, chemical, or biological quality of the resource [43 CFR § 11.14(nn)]. The following factors may be considered in estimating recovery times [43 CFR § 11.73(c)(2)]:

- ▶ ecological succession patterns in the area
- ▶ growth or reproductive patterns, life cycles, and ecological requirements of biological species involved, including their reaction or tolerance to the hazardous substance involved

- ▶ bioaccumulation and extent of hazardous substances in the food chain
- ▶ chemical, physical, and biological removal rates of the hazardous substance from the media involved.

This preliminary determination of recovery period for the KRE Assessment Area focuses on natural processes related to the loss of PCBs from the environment. KRE natural resources will remain exposed to PCBs as long as environmental media such as soils, sediments, groundwater, and surface water remain contaminated and continue to operate as exposure pathways. This Stage I Assessment Plan considers the recovery period to be the longest length of time required to return the services of the injured resources to baseline [43 CFR § 11.14(gg)].

PCBs are highly persistent compounds and degrade very slowly (Eisler, 1986; Erickson, 1997). In fact, their resistance to most chemical degradation processes is one of the key features that led to their widespread use (Erickson, 1997). However, PCBs can be degraded by microbial communities under both aerobic (i.e., in the presence of oxygen) and anaerobic (i.e., with no oxygen present) conditions. Both aerobic degradation and anaerobic dechlorination have been documented in sediments from PCB-contaminated aquatic systems (e.g., Brown and Wagner, 1990; Flanagan and May, 1993), although these processes are much slower for PCBs than for other compounds (Erickson, 1997). Where it occurs, aerobic microbial degradation acts primarily on selected lower chlorinated PCB congeners,<sup>1</sup> ultimately producing carbon dioxide, water, and chloride ions (Erickson, 1997). Anaerobic microbial degradation involves dechlorination, where chlorine atoms are preferentially removed from the higher chlorinated congeners and lower chlorinated PCB congeners are produced (Brown et al., 1987; Abramowicz et al., 1993). Anaerobic dechlorination does not reduce the amount of PCBs present, but reduces the number of chlorine atoms on the PCB molecules that are subject to dechlorination.

The ability of anaerobic microbial communities to dechlorinate PCB congeners is congener- and site-specific, with different river systems showing different patterns of dechlorination, presumably related at least in part to differences in microbial communities present (Brown et al., 1987; Rhee et al., 1993a; Sokol et al., 1994). The total PCB sediment concentration is also a primary factor regulating PCB dechlorination, with dechlorination rates increasing with increasing sediment PCB concentration (Abramowicz et al., 1993). An apparent threshold concentration may exist below which dechlorination is very slow or does not occur. For example, in PCB contaminated reaches of the Hudson River, a PCB contaminated Superfund site in New York, a threshold sediment concentration of 30 mg/kg was estimated for dechlorination of PCBs (U.S. EPA, 1997). Sokol et al. (1998) also observed a similar threshold concentration for PCB

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1. PCBs is a class of compounds that consists of 209 unique compounds that differ in the number and distribution of chlorine atoms on a biphenyl structure. Each of the 209 compounds is called a PCB congener.

dechlorination in sediment collected from PCB-contaminated reaches of the St. Lawrence River; no dechlorination was detected at concentrations below a threshold of between 35 and 45 mg/kg. However, a recent evaluation of dechlorination studies conducted as part of the U.S. EPA's reassessment of the Hudson River PCB Superfund site concluded that a threshold concentration for dechlorination is not supported by the available data (Eastern Research Group, 1999). While dechlorination is predictable at higher PCB concentrations, there is some uncertainty regarding whether dechlorination occurs at lower concentrations (Eastern Research Group, 1999). Rhee et al. (1993b) observed that dechlorination did not occur at elevated PCB concentrations (e.g., as elevated as 1,000 or 1,500 mg/kg), indicating that dechlorination may be inhibited at extremely elevated PCB concentrations as well.

As summarized in Sokol et al. (1998), natural recovery via anaerobic dechlorination appears to be limited for the following reasons:

- ▶ Chlorine removal decreases as sediment PCB concentration decreases.
- ▶ Chlorine removal is limited by the position and pattern of chlorine substitution on the biphenyl molecule.
- ▶ Chlorine removal appears to be limited below a threshold concentration of approximately 30 mg/kg.

For example, in the Hudson River it has been estimated that dechlorination reduced the original PCB concentrations (on a mass basis) present in the river by less than 10% (U.S. EPA, 1997). For the Hudson River, U.S. EPA (1997) concluded that the remaining PCBs would not be further naturally remediated via dechlorination.

Other natural processes related to the loss of PCBs include volatilization and desorption into the water column (from the sediment) and migration downstream. However, both of these processes typically are slow relative to the mass of PCBs in the sediment because of the very low vapor pressure and extreme hydrophobicity of PCB molecules (Erickson, 1997).

Because of the persistence of PCBs in the environment, natural recovery of PCB contamination will proceed very slowly in the KRE. Sediment burial and downstream particulate transport are typically the primary loss mechanism for PCBs in riverine systems (e.g., Velleux and Endicott, 1994). However, PCBs buried in deeper sediment can be re-exposed through anthropogenic activities (e.g., dredging, boating) or through high-flow events. Although the Trustees are unable to quantify an expected natural recovery period for the KRE at this time, the chemical nature of PCBs and what is known regarding loss of PCBs from environmental systems demonstrate that the natural recovery period is expected to be very long, at least on the order of many decades.

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## 5. Stage I Injury Assessment

Chapter 4 provided information that confirmed that natural resources in the KRE Assessment Area, including surface water, sediments, groundwater, soils, and biological resources, have been exposed to PCBs. To evaluate the nature, extent, and degree of injury to exposed natural resources, the Trustees will conduct a Stage I injury assessment. The purpose of the injury assessment is to determine whether natural resources have been injured [43 CFR § 11.61], to identify the environmental pathways through which injured resources have been exposed to hazardous substances [43 CFR § 11.63], and to quantify the degree and extent (spatial and temporal) of injury [43 CFR § 11.71].

As discussed in Chapter 1, the Trustees will conduct the KRE NRDA in stages. The Stage I assessment will be conducted primarily with existing information, supplemented with a limited amount of additional data. If deemed necessary, a more complete State II assessment may be conducted to address uncertainties in the Stage I assessment.

### 5.1 Injury Assessment Approach

Injury is defined in the DOI regulations as a “. . . measurable adverse change, either long- or short-term, in the chemical or physical quality or the viability of a natural resource resulting either directly or indirectly from exposure to a . . . release of a hazardous substance, or exposure to a product of reactions resulting from the . . . release of a hazardous substance. As used in this part, injury encompasses the phrases ‘injury,’ ‘destruction,’ or ‘loss’” [43 CFR § 11.14(v)].

The injury assessment will involve two basic steps, injury determination and injury quantification.

1. ***Injury determination.*** The Trustees will determine whether an injury to one or more natural resources has occurred as a result of releases of hazardous substances [43 CFR § 11.62].
2. ***Injury quantification.*** The injuries determined by the Trustees will be quantified in terms of changes from “baseline conditions”<sup>1</sup> [43 CFR § 11.71(b)(2)]. Quantification will address both the spatial and temporal extent of injury, as well as evaluation of the degree

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1. Baseline conditions are the conditions that would have existed at the assessment area had the release of the hazardous substance not occurred [43 CFR § 11.14(e)].

of injury. Quantification will be conducted primarily to provide information that is relevant to the damage determination and to restoration planning.

As described in the Preassessment Screen for the KRE Assessment Area, natural resources under the trusteeship of the Trustees that have been potentially injured by releases of PCBs from the PRP facilities include, but are not limited to, surface water resources, including surface water and sediments (bed, bank, and shoreline); groundwater resources; geologic resources, including floodplain soils adjacent to Portage Creek and the Kalamazoo River; aquatic biota, including aquatic invertebrates and resident and migratory fish; and terrestrial biota, including terrestrial invertebrates, mammals, and birds (Stratus Consulting, 2000). Consistent with the Preassessment Screen, the Stage I injury assessment will address these natural resources. If the evaluation of existing data indicates that additional natural resources are potentially injured, then these natural resources will also be addressed in the Stage I injury assessment.

Consistent with the DOI regulations, injury determination and quantification will be evaluated on a resource-by-resource basis. However, natural resources and the ecological services they provide are interdependent. For example, surface water, bed, bank, and suspended sediments, floodplain soils, and riparian vegetation together provide habitat – and lateral and longitudinal connectivity between habitats — for aquatic biota, semi-aquatic biota, and upland biota dependent on access to the river or riparian zone. Hence, injuries to individual natural resources may cause ecosystem-level service reductions. Overall, it is the entire KRE ecosystem and associated ecosystem services that may be injured as a result of the releases of hazardous substances from the PRP facilities to natural resources. Hence, while this Stage I assessment will be conducted on a resource-by-resource basis, the evaluation of injury and damage determination will also incorporate ecosystem processes that encompass the loss of ecosystem services within and across these natural resources (see Chapter 6).

## **5.2 Data Sources**

This Section describes the data and information sources that will be used in the Stage I injury assessment. The Stage I injury assessment will rely primarily on data and information already available, supplemented with limited time-critical and opportunistic sampling that will be conducted by the Trustees.

### **5.2.1 Available Data**

The Trustees will gather and analyze available information relevant to assessing injuries resulting from PCB releases into the KRE. Data sources that will be evaluated in the Stage I injury assessment include:

- ▶ articles published in the peer-reviewed literature
- ▶ state and federal government reports and data
- ▶ industry reports and data
- ▶ RI/FS reports, including technical memoranda
- ▶ long-term monitoring data being collected for the site
- ▶ the KRE ecological risk assessment, including information used to support the ecological risk assessment
- ▶ ongoing ecological or toxicological studies being conducted by various investigators.

Several ongoing studies or soon-be-initiated studies will produce data potentially relevant to the Stage I injury assessment. For example, Michigan State University has received funding from the PRPs to conduct additional ecological and toxicological studies that may provide valuable information for the injury assessment. Therefore, the Trustees will monitor relevant studies being conducted by these and other researchers, and, if appropriate, will participate in the studies by reviewing study plans, observing field work, and splitting samples for independent analysis. This work will help ensure the usability of the data for the NRDA injury assessment.

Only information that has sufficient supporting documentation will be used in the Stage I assessment. Data sources will be screened to verify that supporting documentation is available and sufficient to allow for an evaluation of the reliability and usability of the information. Data sources should have the following types of supporting documentation available to be considered usable:

- ▶ sampling methodology, including information on sample location, environmental media sampled, and measurement units
- ▶ chemical analysis, including information on detection limits and methodology
- ▶ raw data or data tabulations (e.g., rather than figures only)
- ▶ accompanying quality assurance/quality control (QA/QC) data or separate QA/QC reports.

This supporting documentation will be evaluated for each potential data source to determine the acceptability of the data for the Stage I assessment.

Data considered acceptable for the Stage I assessment will be compiled into electronic databases for analysis. The development of these databases (i.e., data entry and validation) and subsequent data analysis (statistical analysis, generation of figures) will be conducted following a strict program of QA/QC. The overall objective of this QA/QC program will be to ensure that the data used in the Stage I assessment are an accurate representation of the data as presented in the original document or data source. Steps that will be taken to ensure data quality will include validation of all data entered into the databases (to eliminate data entry mistakes), review of all calculations performed on the data (including verification of all mathematical equations), and compilation and review of computer logs to track database changes and modifications.

### **5.2.2 Supplemental Data Collection**

The Trustees anticipate collecting limited additional data on the current or recent exposure of selected bird species to PCBs and other contaminants in the KRE. These data will be used in the Stage I injury assessment to help determine the likelihood that PCB concentrations are sufficient to cause injury to birds, as described in Section 5.4.5. The supplemental Trustee data will include the following:

- ▶ The results of the chemical analysis of great horned owl and red-winged blackbird eggs that were collected from the KRE by the Trustees in the spring of 2000. This egg collection was a time-critical sample collection to provide data on recent exposure of KRE bird eggs to PCBs and other contaminants.
- ▶ The results of KRE bald eagle reproduction monitoring that will be conducted in the spring of 2001 and chemical analysis of bald eagle eggs and serum collected in the past by the U.S. Fish and Wildlife Service or that will be collected in the spring of 2001. Only eggs which fail to hatch are collected for chemical analysis.

Because of the limited extent of this time-critical and opportunistic sampling that the Trustees will be conducting for the Stage I assessment, no Stage I Assessment Quality Assurance Project Plan was prepared. However, the sample collection and analysis will be conducted according to existing standard operating procedures. The bald eagle egg collection will be conducted in accordance with the standard operating procedures contained in Bowerman (1991) and U.S. FWS (1992). Bald eagle, great-horned owl, and red-winged blackbird eggs will be analyzed at the U.S. FWS Patuxent Analytical Control Facility or one of their contract laboratories. The facility maintains a rigorous QA/QC program for sample analysis and selects contract laboratories based on their ability to meet the QA/QC requirements. More detailed descriptions of the quality assurance program and specific standard operating procedures for analysis of PCBs and other organochlorine compounds are available upon request (see Section 5.5). More

information on the Patuxent Analytical Control Facility QA/QC program and laboratory methods can be obtained from <http://www.pwrc.usgs.gov/pacfhome.htm>.

## 5.3 Pathway Evaluation

As part of the injury determination phase of the Stage I assessment, a pathway evaluation will be conducted [43 CFR § 11.63]. Natural resources, either singly or in combinations with other media, can serve as exposure pathways. For example, the resuspension of PCB contaminated sediments can result in exposure of surface water resources, floodplain soil resources, sediment resources, and biota resources downstream.

The Stage I pathway evaluation will be limited to available information for the KRE Assessment Area. As per DOI regulations, “the pathway may be determined by either demonstrating the presence of the . . . hazardous substances in sufficient concentrations in the pathway resource or by using a model that demonstrates that the conditions existed . . . such that the route served as a pathway” [43 CFR § 11.63(a)(2)].

The Stage I pathway evaluation will focus on evaluating the extent to which hazardous substances in the KRE can be attributed to releases by the PRPs and the subsequent downstream migration throughout the Kalamazoo River and into Lake Michigan. This evaluation will be based on:

- ▶ available information on releases of hazardous substances in the KRE, including from PRP facilities and from other sources
- ▶ spatial and temporal trends of hazardous substance concentrations in natural resources, including surface water and sediment, groundwater, floodplain soils, and biota
- ▶ PCB congener patterns in sediment and floodplain soils
- ▶ PCB fate and transport models (if available).

## 5.4 Injury Determination and Quantification

### 5.4.1 Surface water resources

Surface water resources are defined in the DOI regulations as including both surface water and sediments suspended in water or lying on the bank, bed, or shoreline [43 CFR § 11.14(pp)]. However, surface water resources and sediment resources are discussed separately here.

Ecosystem services provided by surface water include habitat for migratory birds, fish, benthic macroinvertebrates, and aquatic, semiaquatic, and amphibious animals; water, nutrients, and sediment transport to riparian vegetation; nutrient cycling; geochemical exchange processes; primary and secondary productivity and transport of energy (food) to downstream and downgradient organisms; growth media for aquatic and wetland plants; and a migration corridor. Human use services include drinking water, swimming, boating, industrial water supply, other water-based recreation, and assimilative capacity (i.e., the ability of a resource to “absorb low levels of [contaminants] without exceeding standards or without effects” [51 Fed. Reg. 27716, Aug 1, 1986]).

### ***Surface water injury definitions***

Based on an initial review of existing data, definitions of injury relevant to evaluation of injuries to surface water resources include the following:

- ▶ Concentrations and duration of substances in excess of drinking water standards as established by Sections 1411-1416 of the Safe Drinking Water Act (SDWA), or by other federal or state laws or regulations that establish such standards for drinking water, in surface water that was potable before the release [43 CFR § 11.62(b)(1)(i)]
- ▶ Concentrations and duration of substances in excess of applicable water quality criteria established by Section 304(a)(1) of the CWA, or by other federal or state laws or regulations that establish such criteria, in surface water that before the release met the criteria and is a committed use as habitat for aquatic life, water supply, or recreation [43 CFR § 11.62(b)(1)(iii)]
- ▶ Concentrations and duration of substances sufficient to have caused injury to ground water, air, geologic, or biological resources, when exposed to surface water; suspended sediments; or bed, bank, or shoreline sediments [43 CFR § 11.62(b)(1)(v)].

### ***Surface water injury determination approach***

The mainstem of the Kalamazoo River has been designated by Michigan for the following uses: agriculture, navigation, industrial water supply, public water supply at the point of water intake, warmwater fishery, other indigenous aquatic life and wildlife, partial body contact recreation and total body contact recreation from May 1 to October 31 (MDEQ, 1994b). Therefore, the Kalamazoo River has a designated committed use, and exceedences of applicable water quality criteria or standards constitute an injury, provided that the water met the criteria or standards prior to the release [43 CFR § 11.62(b)(iii)].

Table 5.1 lists specific regulatory criteria and standards that can be used to evaluate injury to surface waters, as defined in 43 CFR § 11.62(b)(1)(iii) and (v). Criteria include levels of PCB concentrations established to protect drinking water supplies, aquatic life, wildlife, and human health. For example, the Safe Drinking Water Act provides criteria for allowable concentrations of hazardous substances in drinking water (Table 5.1). These and other relevant threshold concentrations will be compared to measurements of hazardous substances in surface water and used to evaluate injury.

<p><b>Table 5.1</b> <b>Surface water criteria and standards established for total PCBs</b></p>	
Source	Standard or criterion (µg/L)
Safe Drinking Water Act Maximum Contaminant Level (40 CFR § 141)	0.5
Safe Drinking Water Act Maximum Contaminant Level Goal <sup>a</sup>	0
U.S. EPA Ambient Water Quality Criteria Chronic Value <sup>b</sup>	0.014
National Toxics Rule <sup>c</sup>	0.00017 (human cancer risk) 0.014 (aquatic life)
Great Lakes Water Quality Guidance <sup>d</sup>	0.000026 (human cancer risk) 0.00012 (wildlife)
Michigan Water Quality Standards Rule 323.1057 <sup>e</sup>	0.000026 (human cancer risk) 0.00012 (wildlife)
<p>a. U.S. EPA, 1995. b. U.S. EPA, 1999. c. 63 FR 61181-61196; 62 FR 42159-42208; MDEQ, 1999. d. 62 FR 11723-11731; 62 FR 52921-52924. e. MDEQ, 1994a.</p>	

Each of the injury definitions identified for surface water resources consists of several components. Table 5.2 summarizes the components of each definition and the conceptual approach that will be taken in assessing each component. The injury determination to be undertaken for surface water resources in this Stage I assessment will focus on an analysis of existing data using the evaluation approach presented in Table 5.2. The assessment will be conducted for Portage Creek, Kalamazoo River, and, depending on the results of the Stage I pathway evaluation, Lake Michigan.

**Table 5.2**  
**Components of relevant surface water injury definitions**

<b>Injury definition</b>	<b>Definition components</b>	<b>Evaluation approach</b>
Water quality exceedences [43 CFR § 11.62(b)(1)(iii)]	Surface waters are a committed use as aquatic life habitat, water supply, or recreation	Determine whether assessment area water bodies have committed uses.
	Concentrations and duration of hazardous substances are in excess of applicable water quality criteria	Perform temporal and spatial comparisons of surface water concentrations to state and federal water quality criteria/standards
	Criteria were not exceeded before release	Compare pre-release conditions to state and federal water quality criteria
Drinking water standards exceedences [43 CFR § 11.62 (b)(1)(i)]	Concentrations and duration of hazardous substances are in excess of applicable drinking water standards	Perform temporal and spatial comparisons of surface water concentrations to state and federal standards
	Water was potable before release	Compare pre-release conditions to drinking water standards
Biological resources injured when exposed to surface water/sediments [43 CFR § 11.62(b)(1)(v)]	Biological resources are injured when exposed to surface water/sediments.	Determine whether biological resources have been injured as a result of exposure to surface water/sediments.

#### 5.4.2 Sediment resources

Ecosystem services provided by sediments include habitat for all biological resources that are dependent on the aquatic habitats in the basin. In addition, sediments contribute to services provided by surface water, including suspended sediment transport processes, security cover for fish and their supporting ecosystems, primary and secondary productivity, geochemical exchange processes, and nutrient cycling and transport.

##### *Sediment injury definitions*

Based on initial review of existing data, definitions of injuries relevant to evaluation of injuries to sediment resources include the following:

- ▶ Concentrations of hazardous substances sufficient to cause injury to biological or surface water resources that are exposed to sediments [43 CFR § 11.62(b)(1)(v); 11.62(e)(11)]

- ▶ Concentrations of PCBs sufficient to exceed the Toxic Substances Control Act (TSCA) regulations for hazardous chemical disposal of 50 mg/kg [40 CFR §761.60(a)(5)].<sup>2</sup>

*Sediment injury determination approach*

Hazardous substances in sediment can cause injury to biological resources through direct toxicity to sediment-dwelling benthic macroinvertebrates or sediment-dwelling fish and through indirect effects as a result of food-chain bioaccumulation to higher trophic level organisms. Hazardous substances in sediment can also cause injury to surface water resources that are exposed to the sediment.

Table 5.3 summarizes the approach that will be used to assess injuries to sediments. The assessment will be conducted for sediments in Portage Creek, Kalamazoo River, and, depending on the results of the Stage I pathway evaluation, Lake Michigan.

*Sediment injury to benthic macroinvertebrates*

To evaluate the potential for sediment hazardous substances to cause toxicity to benthic macroinvertebrates, several different regulatory agencies or research groups have developed sediment effects concentrations (SECs). These SECs are intended to provide a means of evaluating the potential for contaminated sediment to cause toxicity to sediment-dwelling aquatic biota. Examples of SECs are:

- ▶ Ontario Ministry of the Environment Guidelines for the Protection and Management of Aquatic Sediment (Persaud et al., 1993)
- ▶ U.S. EPA ARCS Program Sediment Effects Concentrations (Ingersoll et al., 1996; U.S. EPA, 1996)
- ▶ NOAA Effects Ranges (Long and Morgan, 1991)

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2. This definition of injury is not included in the DOI regulations. However, the DOI regulations indicate that sediments are injured when hazardous substance concentrations are sufficient to cause the sediment to exhibit characteristics identified or listed pursuant to Section 3001 of the Solid Waste Disposal Act (SWDA) [43 CFR 11.62(b)(1)(iv)]. To the extent that regulations promulgated under TSCA require that sediments containing PCBs at concentrations greater than 50 mg/kg must be either incinerated or disposed in a U.S. EPA-approved chemical waste landfill, they are conceptually similar to the effect of listing under the SWDA. Moreover, the response cost incurred as a result of the TSCA guidelines (dredging restrictions, restrictions on sediment disposal) are a measure of damages.

**Table 5.3**  
**Components of relevant sediment injury definitions**

<b>Injury definition</b>	<b>Definition components</b>	<b>Evaluation approach</b>
Biological resources injured when exposed to sediments [43 CFR § 11.62(b)(1)(v)]	Biological resources are injured when exposed to sediments	Compare sediment concentrations to consensus-based sediment-effect concentrations developed by MacDonald et al (2000)
	Higher trophic level organisms are injured when exposed to sediments based on bioaccumulation from the food chain.	Compare sediment concentrations to thresholds for causing injury via bioaccumulation.
Surface water resources injured when exposed to sediments [43 CFR § 11.62(b)(1)(v)].	Surface water resources are injured when exposed to sediments	Compare sediment concentrations to thresholds for causing exceedences of surface water
Sediment resources are injured when hazardous substance concentrations are sufficient to cause the sediment to exhibit characteristics identified or listed pursuant to Section 3001 of the Solid Waste Disposal Act (SWDA) [43 CFR § 11.62(b)(1)(iv)].	Sediment resources are injured.	Compare sediment concentrations to the 50 mg/kg TSCA threshold sediment PCB concentrations sufficient to cause the sediment to exhibit characteristics identified or listed pursuant to Section 3001 of the SWDA.

- ▶ Canadian Sediment Quality Guidelines for the Protection of Aquatic Life (Smith et al., 1996)
- ▶ Interim Criteria for Quality Assessment of St. Lawrence River sediment (Environment Canada, 1992).

All of the SECs are empirically based, relying on databases of sediment contamination and effects to invertebrates. The SECs differ in the underlying databases used, the statistical approaches employed to derive SECs from the databases, and the interpretations of the results of the statistical approaches.

MacDonald et al. (2000) developed “consensus-based” SECs for PCBs that are based on the existing SECs which have been developed by the different agencies and researchers. The consensus-based SECs were derived by estimating the central tendency of existing SECs, thereby “reconciling sediment-quality guidelines that have been developed using the various

empirically based approaches” (MacDonald et al., 2000). MacDonald et al. developed three different levels of SECs for PCBs: a threshold effect concentration of 0.04 mg/kg dry weight (dw), which is intended to be the concentration below which adverse effects are unlikely; a midrange effect concentration of 0.4 mg/kg (dw), which is intended to be the concentration above which adverse effects are frequently observed; and an extreme effect concentration of 1.7 mg/kg (dw), which is the concentration above which adverse effects are usually or always observed.

Using a database of sediment contaminant concentrations and observed effects, MacDonald et al. (2000) evaluated the predictive ability of the consensus SECs in freshwater sediment. Of the samples with PCB concentrations less than the threshold effect concentration, 84% were not toxic. Of the samples with PCB concentrations greater than the midrange and extreme effect concentrations, 68% and 83%, respectively, were toxic. These data show that the consensus-based SECs are effective at predicting the toxicity of PCBs in freshwater sediments.

#### *Sediment injury to higher trophic level organisms*

In addition to causing injury to benthic macroinvertebrates, hazardous substances in sediment can also cause injury to higher trophic level organisms through bioaccumulation in the food chain. No sediment quality guidelines are available for predicting injuries through the food chain exposure route. However, threshold sediment PCB concentrations have been developed based on various models (e.g., biota sediment accumulation factors, thermodynamic equilibrium models, bioconcentration models, and food chain multiplier models; Wisconsin DNR, 1993). For example, sediment PCB threshold concentrations sufficient to cause PCB concentrations in whole fish to exceed the 0.1 mg/kg International Joint Commission objective for protection of piscivorous birds and mammals have been modeled to range from 0.0009 to 0.082 mg/kg (dw) (Wisconsin DNR, 1993). Similarly, the ecological risk assessment for the Kalamazoo River site derived sediment criteria for the protection of mink based on modeling PCBs from sediment into fish (CDM, 2000). The sediment criteria range from 0.036 to 0.1 mg/kg (dw) PCBs, depending on the modeling approach used (CDM, 2000).

Based on the quality and quantity of the existing sediment data and data on the KRE food webs, models that predict exposure to higher trophic levels based on sediment hazardous substance concentrations may be evaluated to determine the potential injury to higher trophic level organisms. In general, PCB food chain effects are predicted to occur at sediment concentrations lower than those that cause direct toxicity to benthic macroinvertebrates (Wisconsin DNR, 1993).

*Sediment injury to surface water resources*

Surface water may also be injured based on exposure to contaminated sediment, as contaminants can migrate from sediment to surface water. Injury to surface water occurs when sediment concentrations are sufficient to cause surface water hazardous substance concentrations to exceed relevant surface water injury criteria. For example, based on equilibrium partitioning models, a threshold sediment concentration of between 0.070 and 0.554 mg/kg (dw) is predicted to cause surface water PCB concentrations to exceed the 0.014 µg/L U.S. EPA chronic AWQC for the protection of aquatic life (Wisconsin DNR, 1993). Another possible modeling approach is to develop and use measured site-specific sediment-to-water concentration ratios (CDM, 2000). Based on the quality and quantity of the existing sediment and surface water data, models may be evaluated to determine the injury to surface water resources in the KRE resulting from contaminated sediments.

### **5.4.3 Groundwater resources**

Groundwater resources are defined in the DOI regulations as “water in a saturated zone or stratum beneath the surface of land or water and the rocks and sediment through which ground water moves” [43 CFR § 11.14(t)].

Ecosystem services provided by groundwater include supporting habitat for terrestrial and aquatic vegetation and recharge services for surface water resources and their supporting ecosystems. Human use services include drinking water and assimilative capacity.

***Groundwater injury definitions***

Based on an initial review of existing data, definitions of injury relevant to evaluation of injuries to groundwater resources include the following:

- ▶ Exceedences of drinking water standards, established by sections 1411-1416 of the SDWA, or by other federal or state laws or regulations that establish such standards for drinking water, in groundwater that was potable before the release [43 CFR § 11.62(c)(i)]
- ▶ Exceedences of AWQC established by section 304(a)(1) of the CWA, or by other federal or state laws or regulations that establish such criteria for domestic water supplies, in groundwater that before the release met the criteria and is a committed use as a domestic water supply [43 CFR § 11.62(c)(iii)]
- ▶ Concentrations of hazardous substances in groundwater sufficient to have caused injury to surface water, air, geologic, or biological resources, when exposed to groundwater [43 CFR § 11.62(c)(iv)].

### ***Groundwater injury determination approach***

Groundwater injury will be evaluated by comparing hazardous substance concentrations to appropriate criteria or standards. For example, the Maximum Contaminant Level (MCL) established under Section 1416 of the SDWA for PCBs in drinking water is 0.5 µg/L [56 FR 3594]. In addition, the U.S. EPA (1995) lists PCBs as a class B2 probable carcinogen and has established a Maximum Contaminant Level Goal (MCLG) of 0 µg/L for PCBs in groundwater. The State of Michigan has also set a criterion for PCBs at the groundwater-surface water interface that is equal to the target detection limit for Aroclors, which ranges from 0.2 µg/L to 0.4 µg/L for different Aroclors (MDEQ, 1998).

Based on the quality and quantity of the existing groundwater concentration data, groundwater injuries will be evaluated using an approach similar to that described for surface water resources. The evaluation may include identification of committed uses and potability of groundwater resources, examination of concentrations and duration of hazardous substances in groundwater, and identification of exceedences of state or federal drinking water standards. Depending on the quality and quantity of data available, concentrations of hazardous substance in groundwater will also be evaluated to determine the spatial extent of injuries, delineate vertical and horizontal distribution and movements of contaminant plumes, and determine if groundwater is a significant pathway of exposure to other natural resources.

#### **5.4.4 Geologic resources**

Geologic resources are defined in the DOI regulations as “those elements of the Earth’s crust such as soils, sediments, rocks, and minerals . . . that are not included in the definitions of ground and surface water resources” [43 CFR § 11.14(s)]. Geological resources in the KRE include floodplain soils.

Sediments deposited behind a number of dams are exposed, for some times of the year, as floodplain soils as a result of dam drawdown. For example, the Plainwell, Otsego, and Trowbridge dams have been removed to their sill levels, exposing approximately 507 acres of former sediments as floodplain soils (Blasland, Bouck & Lee, 1992). During high flow events in any given year, much of this floodplain may be underwater and functioning as wetland and/or riverine sediments. Overlying soils in the KRE include landfills and HRDLs where PCB contaminated waste was disposed and placed in direct contact with the soil resource.

Ecosystem services provided by floodplain soils include habitat for all biological resources that are dependent on riparian or floodplain wetland habitats in the basin. More specifically, floodplain soils provide habitat for migratory birds and mammals; habitat for soil biota; growth media and nutrients for plants; carbon storage, nitrogen fixation, decomposition, and nutrient

cycling; soil organic matter and allochthonous energy to streams; hydrograph moderation; and geochemical exchange processes. Human use services include recreation (hiking, picnicking) and access corridors.

### *Geologic injury definitions*

Based on an initial review of existing data, definitions of injury relevant to evaluation of injuries to geologic resources include the following:

- Concentrations sufficient to injure other resources, including terrestrial organisms and vegetation (e.g., toxicity), groundwater, and wildlife [43 CFR 11.62(e)].

### *Geological resource injury determination approach*

There are no specific numeric criteria for determining when soil hazardous substance concentrations are sufficient to cause injury to exposed biological resources. The uptake, assimilation, transfer, and toxicity of soil contaminants can vary greatly from system to system. A site-specific PCB soil uptake and bioaccumulation model was developed for the KRE as part of the RI/FS ecological risk assessment (CDM, 1999). Model-derived minimum threshold values (based on estimated species-specific dietary PCB no observed adverse effects concentrations) are provided for songbirds, small terrestrial mammals, carnivorous mammals, and carnivorous birds (Table 5.4). This model, as well as any alternative models available during the course of the Stage I assessment, may be used to estimate soil PCB concentrations that are sufficient to cause injury to biota exposed to the soil.

<p align="center"><b>Table 5.4</b> <b>Toxicological benchmarks: PCB soil threshold concentrations for protection of wildlife</b></p>		
<b>Soil PCB concentration</b>	<b>Protection endpoint</b>	<b>Reference</b>
0.7-2.7 mg/kg	Protection of songbirds (robin)	CDM, 2000
0.8 mg/kg	Protection of small terrestrial mammals (mouse)	CDM, 1999
8 mg/kg	Protection of carnivorous mammals (fox)	CDM, 1999
0.4 mg/kg	Protection of non-piscivorous raptors (owl)	CDM, 2000
1.0 mg/kg	Protection of wildlife	U.S. DOI (as cited in U.S. EPA, 1990)
0.371 mg/kg	Based on unspecified effects in short-tailed shrew	Efroymsen et al., 1997

In addition, the DOI (as cited in U.S. EPA, 1990) has recommended that soil levels of PCBs not exceed 1.0 mg/kg for the protection of wildlife (Table 5.4). However, the U.S. EPA recommends an in-depth analysis at sites where this pathway may be of particular significance (U.S. EPA, 1990). The 1.0 mg/kg recommended threshold is not specified in the DOI regulations for conducting NRDAs, and therefore an exceedence of 1.0 mg/kg PCBs in soils does not necessarily constitute injury. However, the 1.0 mg/kg U.S. DOI guideline may be used to evaluate potential injuries and the potential for floodplain soils to act as a pathway for injury to biota.

A preliminary remediation goal of 0.371 mg/kg PCBs has been established for protection of wildlife for use in risk assessments and decision making at CERCLA sites (Table 5.4; Efroymson et al., 1997). This remediation goal also is not specified in the U.S. DOI regulations for conducting NRDAs. However, the preliminary remediation goal of 0.371 mg/kg may be used to evaluate potential injuries and the potential for floodplain soils to act as a pathway for injury to biota.

The assessment will be conducted for geologic resources throughout the KRE.

#### 5.4.5 Biological resources

Biological resources are defined in the DOI regulations as “those natural resources referred to in section 101(16) of CERCLA as fish and wildlife and other biota. Fish and wildlife include marine and freshwater aquatic and terrestrial species; game, nongame, and commercial species; and threatened, endangered, and State sensitive species. Other biota encompass shellfish, terrestrial and aquatic plants, and other living organisms” [43 CFR § 11.14(s)].

The Kalamazoo River supports a warm water fishery from Morrow Pond to its mouth at Lake Michigan, and there is a distinct difference in species composition above and below the Lake Allegan Dam. The fishery above the dam includes carp, white sucker, smallmouth bass, walleye, northern pike, channel catfish, and black crappie (J. Wesley, MDNR Fisheries Division, pers. comm., 2000). Carp and white suckers dominated the fishery until water quality improvements were made in the 1980s (Knight and Lauff, 1969; Michigan Water Resources Commission, 1972; Towns, 1984). The fishery below Lake Allegan Dam to the mouth is strongly influenced by migrating species from Lake Michigan. Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), steelhead (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), walleye, and lake sturgeon (*Acipenser fulvescens*) run the lower river to spawn, and the Lake Allegan Dam prevents passage of these fish to upstream areas. Stocking of salmonid species began in the early 1970s. Currently, chinook salmon, steelhead, brown trout, and walleye are stocked in the lower river (J. Wesley, MDNR Fisheries Division, pers. comm., 2000). Other game species that occur in this lower section include smallmouth bass, largemouth bass, northern

pike, channel catfish, flathead catfish (*Pylodictis olivaris*), black crappie, yellow perch, and some white bass/hybrid striped bass (*Morone* sp.). Nontarget species (mainly carp, white sucker, and freshwater drum (*Aplodinotus grunniens*)) are also common in this lower river section (Knight and Lauff, 1969, Michigan Water Resources Commission, 1972; Towns, 1984; J. Wesley, MDNR Fisheries Division, pers. comm., 2000).

The majority of the Kalamazoo River corridor downstream of the city of Kalamazoo is relatively undeveloped. Riparian wetlands and floodplains are abundant and provide ample wildlife habitat for numerous wildlife species. Sections of the Kalamazoo River corridor, including the Allegan State Game Area and the private Pottawatamie Fish and Game Club, are reserved and managed specifically for wildlife resources. Wildlife known to inhabit the area include a variety of mammalian and avian species. Mammals such as red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), mink, muskrat, white-tailed deer (*Odocoileus virginianus*), woodchuck (*Marmota monax*), rabbit (*Sylvilagus floridanus*), house mice (*Mus musculus*), deer mice (*Peromyscus maniculatus* and *P. leucopus*), fox squirrel (*Sciurus niger*), and gray squirrel (*S. carolinensis*) can be found in the area, as well as resident and migratory birds such as bald eagle, great blue heron, great horned owl, red-tailed hawk, American robin (*Turdus migratorius*), American woodcock (*Scolopax minor*), ducks, and Canada geese (MDNR, 1987b).

Ecosystem services provided by fish, birds, and wildlife include prey for carnivorous and omnivorous wildlife, and nutrient and energy cycling. Human use services include various types of recreation (fishing, hunting, birdwatching) and a food source.

### ***Biological resources injury definitions***

Based on an initial review of existing data, definitions of injury relevant to evaluation of injuries to biological resources include the following:

- ▶ Concentrations of a hazardous substance sufficient to exceed action or tolerance levels established under section 402 of the Food, Drug and Cosmetic Act, 21 U.S.C. 342, in edible portions of organisms [43 CFR § 11.62(f)(1)(ii)]
- ▶ Concentrations of a hazardous substance sufficient to exceed levels for which an appropriate governmental health agency has issued directives to limit or ban consumption of such organism [43 CFR § 11.62(f)(1)(iii)]
- ▶ Concentrations of a hazardous substance sufficient to cause the biological resource or its offspring to have undergone at least one of the following adverse changes in viability: death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations [43 CFR § 11.62(f)(1)(i)].

An injury to biological resources can be demonstrated, per the DOI regulations, if an adverse biological response meets the following acceptance criteria [43 CFR § 11.62 (f)(2)(i-iv)]:

- ▶ The biological response is often the result of exposure to . . . [the] hazardous substances.
- ▶ Exposure to . . . [the] hazardous substances is known to cause this biological response in free-ranging organisms.
- ▶ Exposure to . . . [the] hazardous substances is known to cause this biological response in controlled experiments.
- ▶ The biological response measurement is practical to perform and produces scientifically valid results.

***Biological resources injury determination approach***

The injury definitions identified for biological resources consist of several components. Table 5.5 summarizes the components of each definition and the approaches that will be used by the Trustees in assessing each component. The assessment will be conducted for biological resources throughout the KRE and, depending on the results of the Stage I pathway evaluation, biological resources in Lake Michigan.

Approaches for evaluating exceedences of action or tolerance levels, state consumption advisories, and biological injuries to fish and wildlife are described below.

<p><b>Table 5.5</b> <b>Components of relevant biological resources injury definitions</b></p>		
<b>Injury definition</b>	<b>Definition components</b>	<b>Evaluation approach</b>
Food, Drug, and Cosmetic Act exceedences [43 CFR § 11.62(f)(1)(ii)]	Tissue concentrations of a hazardous substance in edible portions of organisms exceed applicable standards.	Compare organism tissue concentrations to applicable Food and Drug Administration (FDA) tolerances.
Consumption advisory exceedences [43 CFR § 11.62(f)(1)(iii)]	Tissue concentrations of a hazardous substance exceed levels for which a state has issued directives to limit or ban consumption.	Compile fish and bird consumption advisories and relate to concentrations of hazardous substances.
Adverse changes in viability [43 CFR § 11.62(f)(1)(i)]	The biological resource or its offspring has undergone adverse changes in viability.	Review site-specific field and laboratory studies on adverse effects; compare site exposure data to toxicological data; evaluate causality.

*Exceedences of action or tolerance levels*

Regulations promulgated pursuant to the federal Food, Drug and Cosmetics Act (Section 402, 21 U.S.C. 342) and fish consumption guidelines established by the Michigan Department of Public Health (MDPH)<sup>3</sup> set an action or tolerance level of 2 mg/kg total PCBs in edible portions of fish tissue. In addition, FDA regulations (Section 402, 21 U.S.C. 342) also establish an action or tolerance level of 3 mg/kg PCB in poultry (fat basis) [21 CFR § 109.30].

To evaluate the potential injury to fish and wildlife in the KRE based on exceedences of action or tolerance levels, the Trustees will compare the appropriate federal and state action or tolerance level to fish fillets of recreational and commercial fish species and to edible portions of wildlife hunted recreationally, including waterfowl (ducks and geese).

*Consumption advisories*

The State of Michigan has issued fish consumption advisories for the Kalamazoo River and Portage Creek (Table 5.6; Michigan Department of Community Health, 2000). These fish consumption advisories either restrict consumption or recommend no consumption for specific species of fish found in sections of the river or creek. Two types of consumption advisories are issued: one for the general population and the other for women and children. The consumption advisory for women and children is more restrictive and is meant for women of childbearing age and children under 15.

To evaluate consumption advisories for fish and waterfowl in the KRE, the Trustees will gather and analyze available information on consumption advisories for all relevant time periods, and evaluate the State's procedures for establishing the advisories.

*Biological injuries*

Biological injuries include those injuries that adversely affect the viability of aquatic and terrestrial biota [43 CFR § 11.62(f)(1)(i)]. Biological injuries to aquatic biota may be assessed in aquatic invertebrates, fish, reptiles, amphibians, waterfowl, and aquatic or semi-aquatic mammals. The following injury categories may be assessed by the Trustees: death, disease, cancer, physiological malfunctions (including reproduction), developmental effects (reduced growth), and physical deformities. PCBs have been documented to cause these types of adverse effects in fish and wildlife exposed to PCBs (e.g., Eisler, 1986; Peterson et al., 1993; Safe, 1994).

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3. As of April 1, 1996, pursuant to Executive Order 1996-1, the functions of the Michigan DPH were divided among the Michigan DEQ, the Commerce Department, and the Department of Community Health.

**Table 5.6**  
**Fish consumption advisories issued by Michigan for the Kalamazoo River**  
**and Portage Creek because of elevated concentrations of PCBs**

River section	Species	Consumption advisory
Kalamazoo River (from Battle Creek to Morrow Pond dam)	Carp	Do not eat fish.
Kalamazoo River (from Morrow Pond Dam to Lake Allegan Dam) and Portage Creek (below Monarch Mill Pond)	Carp, catfish, suckers	Do not eat fish.
	Largemouth and smallmouth bass	Do not eat fish greater than 14 inches long.
	All other species	General population should limit consumption to one meal per week.  Women and children <sup>a</sup> should not eat these fish species.
Kalamazoo River (below Lake Allegan Dam)	Carp, catfish	Do not eat fish
	Largemouth and smallmouth bass	General population should limit consumption to one meal per week for fish greater than 14 inches long.  Women and children should not eat fish greater than 14 inches long.
	Northern pike	Do not eat fish greater than 22 inches long
	All other species	General population have unlimited consumption of these fish species.  Women and children should limit consumption to one meal per month.
a. Women of childbearing years and children less than 15. Source: Michigan Department of Community Health, 2000.		

Site-specific data on adverse effects to biological resources will be compiled and reviewed. In addition, site data (or models, if appropriate) on the exposure of biota to PCBs will be compared to toxicity reference values obtained from the literature. The May 2000 Preassessment Screen contains examples of such toxicity reference values (Stratus Consulting, 2000).

## 5.5 Procedures for Sharing Data

The DOI NRDA regulations state that an assessment plan includes:

- ▶ procedures and schedules for sharing data, split samples, and results of analyses, when requested, with any identified potentially responsible parties and other natural resource Trustees [43 CFR § 11.31(a)(4)].

To facilitate the data-sharing process, PRPs and other state or federal agencies will be provided with an opportunity, as deemed appropriate, to obtain a copy of the database(s) used in the Stage I assessment. If PRPs or state or federal agencies wish to receive such data, a written request identifying the data desired should be submitted to:

Lisa L. Williams  
U.S. Fish and Wildlife Service  
2651 Coolidge Road, Suite 101  
East Lansing, MI 48823.

The Trustees will provide the data to the PRPs and any other interested parties once the data have been validated and are available.

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## 6. Stage I Damage Determination

This chapter describes the Trustees' approach for conducting the Stage I damage determination. Section 6.1 provides an overview of the approach that will be used by the Trustees in the Stage I assessment. Section 6.2 describes the approach for the Stage I restoration planning and costing, and Section 6.3 describes the approach for the Stage I determination of compensable values. Section 6.4 describes the relationship between the NRDA damage determination and the response actions being conducted as part of the ongoing RI/FS.

### 6.1 Overview

The purpose of a damage determination is to “establish the amount of money to be sought in compensation for injuries to natural resources resulting from a . . . release of a hazardous substance” [43 CFR § 11.80(b)]. The DOI regulations define the measure of damages as *restoration costs* plus, at the discretion of the Trustees, *compensable values for interim losses* [43 CFR § 11.80(b)]. Restoration costs are the costs of restoration actions that restore the injured resources and services<sup>1</sup> to baseline, which is the condition that would have existed had the hazardous substance release(s) not occurred [43 CFR § 11.14(e)]. Restoration actions can include actions to restore, rehabilitate, replace, or acquire the equivalent of the injured resources and services they provide [43 CFR § 11.80(b)]. Compensable values for interim losses are “the value of lost public use of the services provided by the injured resources” [43 CFR § 11.83(c)(1)] and can include both past losses and losses that will occur until the injured resources and services are returned to baseline. Thus, the total amount of NRDA damages includes both the cost of restoration to baseline and the compensable values for interim losses. All recovered damages will be used by the Trustees for environmental restoration.

The NRDA damage determination process is distinct and separate from the ongoing RI/FS work being conducted by MDEQ, U.S. EPA, and the PRPs. The NRDA and RI/FS processes address different aspects of the PCB contamination problem in the KRE. The purpose of the RI/FS is to provide information for selection of a remedy that “prevent[s] or minimize[s] the releases of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment” [CERCLA § 101(24), 42 U.S.C. 9601]. Remedial actions often involve source control measures or measures to reduce risk from exposure to hazardous substances. The purpose of NRDA is to restore resources and services to baseline conditions, and recover damages for interim losses and apply those damages to restoration. For

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1. Natural resource services are defined as the “physical and biological functions performed by the resource, including the human uses of those functions” [43 CFR § 11.14(nn)]

example, NRDA restoration actions can include extraction or containment of contaminated sediment/soil to shorten the return to baseline or to reduce the interim losses, as well as other types of restoration actions to address injuries to natural resources (e.g., habitat restoration, species management programs, actions to increase human use or enjoyment of the resources). Therefore, both processes address the problems caused by the hazardous substance releases into the KRE, but they differ in their objective, methods, and outcome.

The Trustees will consider two types of restoration actions in the Stage I assessment:

- ▶ *Sediment/soil restoration.* To the extent that on-site actions, including extraction or containment of contaminated sediment and soils, are necessary to accelerate the return of injured resources and services to baseline, the Trustees will evaluate such actions as potential restoration actions.
- ▶ *Ecosystem-based restoration.* Ecosystem-based restoration actions can restore resources and/or services that are similar to, but not the same as, those that are injured. Examples of such restoration actions could include habitat restoration or enhancement, stocking programs, species management programs, or improvements in the public's ability to use or enjoy resources.

As described in Section 6.2, the Stage I restoration planning effort will identify specific types of potential restoration actions (within the two general types listed above) and estimate the costs of their implementation.

The value of lost recreational fishing services will be an important component of the interim loss compensable value determination, as described in Section 6.3. The compensable values of other losses, including other types of recreation and other active uses (e.g., aesthetics, land use) may also be considered.

## **6.2 Restoration Planning**

The purpose of the Stage I restoration planning is to identify the types and amount of preferred restoration actions and to estimate the costs of their implementation. Two general types of restoration actions will be considered: sediment/soil restoration and ecosystem-based restoration.

### **6.2.1 Sediment/soil restoration**

To the extent that PCBs are causing injuries to natural resources, eliminating or reducing exposure of the injured resources to PCBs can restore the resources to baseline (i.e., the condition they would have been in had the PCB releases not occurred). Thus, actions to extract

or contain PCB contamination, such as sediment dredging or capping, soil removal or capping, or riverbank stabilization, will be evaluated by the Trustees as a potential approach to restoring injured resources to baseline. However, such sediment/soil restoration actions to address PCB contamination cannot compensate for interim losses.

Sediment/soil restoration actions would be in addition to and coordinated with the PCB cleanup that will be selected for the site remedial action. The MDEQ and U.S. EPA, in conjunction with the responsible parties at the site, are conducting a RI/FS for the site. The purpose of the RI/FS is to provide information for making a decision regarding PCB cleanup actions as part of the site remedy. To the extent that additional actions involving PCB-contaminated sediment and/or soil would return the injured resources and services to baseline, and may be justified when considered among a range of restoration options, the Trustees will consider such additional actions as part of the Stage I restoration planning process. The Trustees will conduct an evaluation of the PCB injuries that would remain after implementation of the remedial action, and will consider whether additional removal or other actions involving contaminated sediment or soil would reduce those injuries and thereby speed the return to baseline conditions.

#### **6.2.2 Ecosystem-based restoration**

A second type of restoration action that the Trustees will consider is ecosystem-based restoration. The DOI's NRDA regulations emphasize the restoration of natural resource to baseline, as measured by their services. Services are defined as:

The physical and biological functions performed by the resource. . . . These services are the result of the physical, chemical, or biological quality of the resource [43 CFR §11.14(n)].

The DOI regulations also state that:

*Services include provision of habitat, food and other needs of biological resources . . . flood control, ground water recharge, waste assimilation, and other such functions that may be provided by natural resources [43 CFR §11.71(e)].*

In the KRE, the services provided by different components of the ecosystem are inextricably linked to each other. For example, KRE floodplain soils, floodplain vegetation, and river geomorphology interact to:

- ▶ stabilize streambanks through anchoring of the soil by plant root structures, dissipate erosive stream energy, and maintain channel geometry

- ▶ control surface water/groundwater exchange rates and influence areas of groundwater discharge or recharge
- ▶ control sediment delivery rates to downstream aquatic and riparian resources
- ▶ serve as an important carbon source for the river ecosystem and provide a growth medium for plants and substrate for nutrient cycling and decomposition
- ▶ provide key habitat for vegetation, fish, and migratory birds and mammals
- ▶ provide cover and food for fish and benthic invertebrates, shade the water from solar radiation, contribute to aquatic physical habitat complexity through addition of large woody debris and root masses, and regulate the supply of nutrients to the aquatic ecosystem
- ▶ provide critical connectivity among upland and aquatic habitats and a corridor for upstream and downstream dispersal for plant and animal species.

This linkage between different resources, their functions, and services necessitates an ecosystem-based approach toward restoration planning. Only through considering the interdependencies of the different resources and their services can restoration actions achieve the long-term restoration of the lost resource services in a cost-effective manner.

An ecosystem-based approach toward restoration at the KRE has several implications for the restoration planning process. First, the approach necessitates consideration of multiple types of restoration actions to address services lost because of hazardous substance injuries. The hazardous substances that have been released into the KRE are one of several ecological stressors on the system. Other stressors such as habitat loss or degradation, alterations in natural hydrologic processes, and nonpoint source pollution can also result in loss of resources or services similar to the losses caused by hazardous substance releases. Therefore, to restore KRE resources and services injured by hazardous substances, the Trustees will consider types of restoration activities that address these other stressors. Such restoration activities could include preserving and/or restoring floodplain, wetland, or riverine habitat, restoring the natural river flow patterns, or implementing best management practices in the basin to control nonpoint source runoff. The PRPs may not be liable under CERCLA for the effects caused by these other stressors, but actions to address those effects may be one means to restore resource services lost or impaired by the hazardous substance releases for which the PRPs are responsible.

Second, an ecosystem-based approach toward restoration planning also necessitates an ecosystem-based approach toward evaluating the ecological losses associated with Superfund response actions. Some response actions may incur “collateral” injuries on ecological resources in the KRE. For example, extensive sheet piling of riverbanks can channelize river flow, restrict

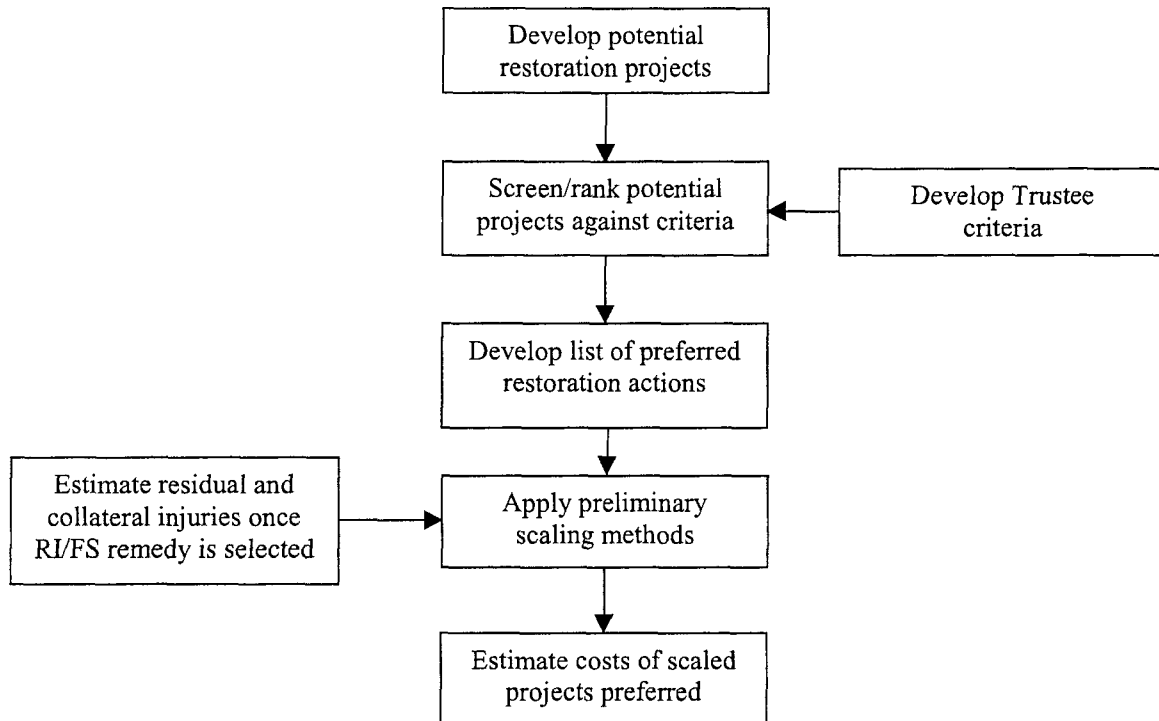
natural flood regimes, and alter the connectivity between the river and its riparian corridor. The Stage I restoration planning phase will evaluate and consider potential long-term ecological impacts of the response actions when determining the type and amount of restoration needed.

The Trustees will conduct the identification and selection of Stage I restoration alternatives in the context of and consistent with long-term ecological management goals for the KRE. NRDA restoration actions must be consistent with the long-term goals for the KRE for the restoration to be both long-lasting and effective at making the public whole. Restoration actions that do not take into account the long-term ecological management goals for the site may be counterproductive by providing services that are inconsistent with the needs of resource managers and the public. Such actions may also be short-lived if they ignore the ecological and hydrological realities of the site. Therefore, the restoration planning will be conducted in close coordination with appropriate resource managers and within the context of long-term ecological goals for the KRE.

### 6.2.3 Restoration planning activities

Figure 6.1 depicts the Stage I restoration planning activities for the KRE site. First, the Trustees will develop a list of potential restoration actions. This list will rely heavily on restoration proposals or ideas already developed for the KRE by resource managers. The list will include a variety of types of projects that have the potential to restore the range of KRE resources and services. The Trustees will then develop criteria that will be used to evaluate the list of potential projects. The criteria will be based on factors identified in the DOI NRDA regulations [43 CFR § 11.82(d)], on Trustee agency priorities and mandates, and on an ecosystem-based perspective, as described above. The criteria may include such factors as:

- ▶ ***Project acceptability.*** A project must comply with the requirements of the DOI NRDA regulations and with applicable and relevant laws.
- ▶ ***Project focus.*** The degree to which a project meets the goals and objectives of the Trustees for restoration of the KRE is an important factor.
- ▶ ***Project feasibility.*** A project must be technically and administratively feasible and cost-effective.
- ▶ ***Project benefits.*** The types, timing, and permanence of benefits provided by a project will be considered by the Trustees in the context of the types and timing of the resources and services lost and the ecosystem perspective toward restoration.



**Figure 6.1. Process for identifying, selecting, and costing preferred restoration alternatives.**

The list of potential projects will be evaluated using the criteria to provide a short list of preferred restoration alternatives or classes of alternatives. The Trustees anticipate developing a range of alternatives [43 CFR § 11.82(c)] that may include actions such as habitat restoration or enhancement, resource acquisition, species management programs, or enhancements to human use or enjoyment of the resource.

The range of preferred restoration alternatives will then be scaled using preliminary scaling techniques. Scaling is the process of determining the appropriate amount of restoration that is required. Since the appropriate methods for scaling depend on several factors, including the types and magnitude of injuries and service losses and the types of restoration projects being considered, the Trustees cannot at this time specify the scaling methods that will be used in the Stage I assessment. However, the methods (or combinations thereof) used for restoration project scaling will estimate the baseline level of services and the level of services generated by potential restoration actions.

As part of the Stage I restoration planning effort, the Trustees may conduct limited on-site interviews to obtain insight on public opinions about restoration strategies. The intent of these interviews will be to provide information for determining subsequent restoration directions. Interview responses will contain information about public preferences regarding different restoration options.

The Trustees will also develop cost estimates for implementing the preferred and scaled restoration projects. Cost estimates will include both direct and indirect costs of implementing the preferred alternatives [43 CFR § 11.83(b)(1)]. Direct costs are those that are directly associated with the implementation of the restoration alternative, such as compensation of employees, cost of materials acquired, consumed, or expended specifically for the purpose of the action, equipment and other capital expenditures, and other costs expected to be incurred [43 CFR § 11.83(b)(1)(i)]. Indirect costs include costs such as overhead [43 CFR § 11.83(b)(1)(ii)]. The exact methods that will be used to estimate costs depend on the nature of the preferred restoration alternatives [43 CFR § 11.83(b)(2)]. The cost estimates will be used in the overall Stage I quantification of damages.

### **6.3 Compensable Value Determination**

Compensable values for interim losses are the dollar values of the resources and services lost because of the hazardous substance releases. In the Stage I damage determination, the Trustees will use existing information, supplemented by limited new site-specific data collection efforts, to assess compensable values for interim losses. To the extent that more technical and comprehensive analyses can subsequently be undertaken cost-effectively, the compensable value determination may be refined in Stage II.

The Trustees will identify the types of potential damages that are likely to be occurring in the KRE (e.g., recreational fishing, wildlife viewing, dredging or dam removal restrictions). The damage categories quantified in the Stage I assessment will depend on the availability and applicability of existing data. The computation of compensable recreational fishing damages will be a major component of this evaluation.

The evaluation of compensable values for interim losses will be based largely on the benefits transfer approach. Rather than focusing on collecting new primary valuation data, benefits transfer involves estimating damages for the KRE and its circumstances by using values derived from the application of primary economic research methods in other studies at the same or similar sites for the same or similar circumstances. Using already existing (secondary) data for similar areas and similar types of services and resource injuries results in a cost-effective, first-order estimate of damages.

A benefits transfer approach identified in the U.S. DOI regulations, the “unit value” method, will be applied in this evaluation [43 CFR § 11.83(c)(2)(vi)]. For recreational direct use values, for example, the unit value method requires selecting a unit value for the direct use being measured and multiplying it by the number of units lost or impaired as a result of natural resource injuries (e.g., the value of a fishing day multiplied by the number of fishing days lost or impaired). Thus, the unit value method can be used to value not only lost use (including use substituted to other recreational sites) but also the reduction in the quality of use that continues to occur under the current, injured conditions.

To guide the selection of valuation studies for use in the benefits transfer approach, the Stage I assessment will focus on results from studies in and around the KRE and the Great Lakes, and from studies investigating fish consumption advisories (FCAs). An extensive body of literature exists that estimates the value of services lost because of FCAs and reports attitudes toward and behavioral changes as a result of FCAs. Such information will be useful in benefits transfer analysis.

Some limited site-specific data will be used to augment and fortify the benefits transfer analysis. For example, the PRPs have collected and made available data on fishing activity and FCA awareness for 690 anglers residing near the Kalamazoo River basin (Atkins, 1994). An analysis of the Atkins (1994) data set will be performed to understand its contents, strengths, weaknesses, applicability, and conclusions. If appropriate, these data will also be used to identify unique or important aspects of the fishery, and the uniqueness of the site versus the availability of good, proximate substitutes. Other information on the site will also be carefully reviewed as it becomes available to gain an understanding of services and values.

In addition, a statewide recreation demand model is being developed by Michigan State University (MSU) for the State of Michigan. The purpose of the MSU model is to value recreational resources based on observed user behavior as a function of site characteristics and travel costs. The MSU model will be capable of evaluating how recreationists respond to incremental changes in environmental characteristics and their values for such changes, although it is unclear at this time to what extent the model will be directly applicable to the KRE compensable damage determination.

If the MSU model is completed within the time frame of this Stage I assessment, the Trustees will evaluate the model to ascertain its usefulness to support the Kalamazoo NRDA and the overall damage estimate. The use of travel cost methods such as this model is identified in the NRDA regulations as an appropriate valuation method for determining compensable value [43 CFR § 11.83(c)(2)(iv)]. Additional modeling efforts using the model and its data set may be warranted if useful scenarios are possible. Regional values produced by the model may be relevant in calibrating or corroborating benefits transfer results.

Finally, the Trustees will conduct limited interviews with local residents, consisting primarily but not exclusively of anglers and including anglers who fish and who do not fish the Kalamazoo River. These interviews can be used to obtain a variety of detailed information, including recreational trip records and avidity levels, substitution patterns, socioeconomic characteristics, awareness of and attitudes toward FCAs, preferences over different sites, and opinions about the Kalamazoo River. The interviews will provide insight into the impacts of FCAs at the site beyond what is captured in existing data. Results from these interviews will be used to analyze the link between natural resource injuries and their impact on human use service flows, and can be used to validate the benefits transfer estimates of damages.

In the Stage I assessment, sensitivity analysis will be done to address uncertainties in the benefits transfer assumptions [43 CFR § 11.84(d)]. The quality and quantity of substitute sites in the KRE will be given consideration [43 CFR § 11.84(f)]. Measures to guard against double counting and recovery will be incorporated in combining different methods and approaches to estimate value [43 CFR § 11.36(a)(2) and 11.84(c)]. Finally, annual losses will be compounded and discounted to aggregate damages following the guidance in the regulations [43 CFR § 11.84(f)].

## **6.4 Relationship to the RI/FS Process**

A key feature of the relationship between the RI/FS remedy and the NRDA is that the NRDA damage amount is related to the timing, type, and amount of remediation selected from the RI/FS. For example, if a no-action or minimal remedy is selected, then the total amount of lost natural resource services that requires restoration actions will be larger, and the compensable value losses will be larger. Similarly, if the remedy itself results in a loss of resources or services, then additional restoration would be required to compensate the public for these losses.

Because of this relationship, information generated during the NRDA can be beneficial to the RI/FS, and vice versa. The Stage I assessment is being timed to provide useful information to the remedial action decision-makers by evaluating both potential residual injuries (PCB-caused injuries remaining after the selected remedy is implemented) and collateral injuries (injuries resulting from the remedy itself) under different remedial alternatives. This information may help the decision-makers evaluate the overall protection of human health and the environment and the long-term effectiveness of different remedial alternatives. At the same time, the Stage I damage determination cannot be concluded until a remedy for the site is selected, since the type and magnitude of the remedy affects the type and magnitude of restoration that is required to make the public whole. Therefore, information generated as part of the Stage I assessment that is potentially useful to the remedial decision-makers will be provided to them. This exchange of information will help ensure meaningful and useful coordination between the RI/FS and the NRDA.

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ANALYTICAL REPORT

Date: May 11, 1982

To: St. Regis Paper Company  
79 East Fountain St.  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

P.O. Number: PM 27633 4013

re: Seven (7) paperboard samples submitted on April 29 and May 3, 1982  
for Polychlorinated Biphenyl (PCB) analysis.

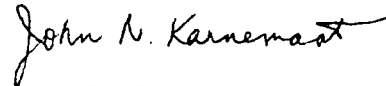
Method: ADAC (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8640 (49)	4-29-82	82-4-26-2-2	0.6
K-8640 (50)	4-29-82	82-4-26-2-3	0.5
K-8640 (51)	4-29-82	82-4-27-2-1	<0.5
K-8640 (52)	4-29-82	82-4-27-3-3	<0.5
K-8646 (53)	5-3-82	82-4-29-3-1	<0.5
K-8646 (54)	5-3-82	82-4-29-3-2	<0.5
K-8646 (55)	5-3-82	82-4-29-3-3	<0.5

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director jak

JNK:jak

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: May 3, 1982

To: St. Regis Paper Company P.O. No: PM 27633-4013  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Eight (8) paperboard samples submitted during April  
for Polychlorinated Biphenyl (PCB) analysis.

Method: AOAC (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8609	4-20-82	82-4-16-3-1	< 0.5
K-8609	4-20-82	82-4-16-3-2	< 0.5
K-8615	4-22-82	82-4-20-2-3	< 0.5
K-8619	4-23-82	84-4-21-2-1	< 0.5
K-8619	4-23-82	84-4-21-2-2	< 0.5
K-8626	4-26-82	82-4-22-3-2	< 0.5
K-8628	4-27-82	82-4-23-3-1	< 0.5
K-8628	4-27-82	82-4-23-3-2	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

JNK:cr

*UP*

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: April 26, 1982

To : St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016

Purchase Order No. PM 27633 4013

Attention: Mr. Edwin Cole

Re : Nine (9) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.

Method: AOAC (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8574	04-13-82	82-4-8-3-1	< 0.5
K-8579	04-14-82	82-4-12-3-2	< 0.5
K-8579	04-14-82	82-4-12-3-3	< 0.5
K-8596	04-16-82	82-4-13-3-1	< 0.5
K-8596	04-16-82	82-4-13-3-2	< 0.5
K-8596	04-16-82	82-4-13-3-3	< 0.5
K-8596	04-16-82	82-4-14-3-3	< 0.5
K-8603	04-19-82	82-4-15-3-2	< 0.5
K-8603	04-19-82	82-4-15-3-3	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*  
John N. Karnemaat  
Director

*CP*

JNK:er

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
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TELEPHONE (616) 381-9666  
ANALYTICAL REPORT

Date: April 19, 1982

To : St. Regis Paper Company      Purchase Order No: PM 27633 4013  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re : Eleven (11) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.

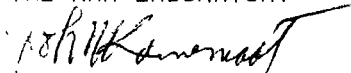
Method: AOAC (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (as Arochlor 1254)</u>
K-8562	4- 7-82	82-4-5-3-1	<0.5
K-8562	4- 7-82	82-4-5-3-3	<0.5
K-8568	4- 9-82	82-4-2-3-3	<0.5
K-8568	4- 9-82	82-4-3-3-1	<0.5
K-8568	4- 9-82	82-4-4-3-1	<0.5
K-8568	4- 9-82	82-4-4-3-2	<0.5
K-8568	4- 9-82	82-4-4-3-3	<0.5
K-8568	4- 9-82	82-4-6-3-1	<0.5
K-8568	4- 9-82	82-4-6-3-2	<0.5
K-8568	4- 9-82	82-4-6-3-3	<0.5
K-8568	4- 9-82	82-4-7-3-1	<0.5

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director

JNK:nem

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ANALYTICAL REPORT

Date: April 9, 1982

To : St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Purchase Order No. PM 27633 4013

Re : Ten (10) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.

Method: AOAC (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (as Aroclor 1254)</u>
K-8551	4-01-82	82-3-26-3-1	< 0.5
K-8551	4-01-82	82-3-26-3-2	< 0.5
K-8551	4-01-82	82-3-26-3-3	< 0.5
K-8551	4-01-82	82-3-27-3-1	< 0.5
K-8551	4-01-82	82-3-27-3-2	< 0.5
K-8553	4-02-82	82-3-30-3-1	< 0.5
K-8553	4-02-82	82-3-30-3-3	< 0.5
K-8553	4-02-82	82-3-31-3-2	< 0.5
K-8556	4-05-82	82-3-31-1-2	< 0.5
K-8556	4-05-82	82-3-31-2-3	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

*OK*

JNK:cr

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TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: April 2, 1982

To : St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Purchase Order No. PM 27633 4013

Re : Ten (10) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.

Method: AOAC (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (as Arochlor 1254)</u>
K-8524	3-24-82	82-3-22-2-3	< 0.5
K-8529	3-25-82	82-3-23-2-1	< 0.5
K-8529	3-25-82	82-3-23-3-1	< 0.5
K-8529	3-25-82	82-3-23-3-2	< 0.5
K-8535	3-26-82	82-3-24-3-1	< 0.5
K-8535	3-26-82	82-3-24-3-2	< 0.5
K-8535	3-26-82	82-3-24-3-3	< 0.5
K-8537	3-29-82	82-3-25-3-1	< 0.5
K-8537	3-29-82	82-3-25-3-2	< 0.5
K-8537	3-29-82	82-3-25-3-3	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*  
John N. Karnemaat  
Director *OK*

JNK:cr



To  
Michael D. Minger/Battle Creek

Date  
January 3, 1990

From  
Irma Warner/St. Paul Mill

Subject  
**PCB ANALYSES**  
**BATTLE CREEK BOARD**

Analyzed 1-2-90

89-9-30-2

0.0319 ppm

89-10-10-3

0.2150 ppm

Analyzed 1-3-90

89-12-19-1

0.0488 ppm

Analyses performed using the FDA approved method.

yd

cc: Gary Kaziukewicz  
George Seiter



To  
Michael D. Minger/Battle Creek

Date  
April 11, 1989

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 4/7/89

Analyzed 4/10/89

89-1-8-3                      0.0913 ppm

89-1-27-1                    0.1583 ppm

Analyzed 4/11/89

89-3-20-2                    0.0275 ppm

89-3-30-1                    0.0156 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz



To	Date
Michael D. Minger/Battle Creek	January 3, 1989
From	Subject
Jeff Martens - Brian Walukiewicz/St. Paul Mill	PCB Analyses Battle Creek Board

12/15/88	88-12-15-1	0.8268 ppm
11/25/88	88-11-25-2	0.2325 ppm
9/29/88	88- 9-29-2	0.4049 ppm
9/12/88	88- 9-12-3	0.0743 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Irma Warner

*sent to  
L. Chodolcrator  
1/9/89*



To  
Michael D. Minger/Battle Creek  
From  
Irma Warner

Date  
September 8, 1988

Subject  
PCB Analyses  
Battle Creek Board

Received 9/7/88

Analyzed 9/8/88

6/28/88  
8/1/88  
8/30/88

88-6-28-2

0.0163 ppm

88-8-1-1

0.0305 ppm

88-8-30-3

0.0282 ppm

Analyses performed using the FDA method.

yd  
cc: Gary Kaziukewicz

Sent to  
Kellogg's  
9/12/88

Sent to Kellness 4/26/88



To  
Michael D. Minger/Battle Creek

Date  
April 19, 1988

From  
Steve Carlstrom/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 4/13/88

Analyzed 4/14/88

2/24/88 88-2-22-3

0.0118 ppm

2/1/88 88-3-1 -2

0.5675 ppm

Analyzed 4/15/88

2/1/88 88-3-16-3

0.0224 ppm

4/1/88 88-4-7 -1

0.0503 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Irma Warner



To  
Michael D. Minger/Battle Creek

Date February 8, 1988

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 2-3-88

Analyzed 2-5-88

87-12-11-2 0.3531 ppm

87-12-27-3 0.2176 ppm

Analyzed 2-8-88

88-1-13-1 0.1471 ppm

88-1-29-2 0.0257 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz

*sent to  
Kellie J. J. 3  
1/1*



To  
Michael D. Minger/Battle Creek

Date  
December 7, 1987

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 12/2/87

Analyzed 12/4/87

87-9-29-1 0.0850 ppm

87-10-12-2 0.0678 ppm

Analyzed 12/7/87

87-10-25-3 0.0266 ppm

87-11-29-2 0.1569 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*Sent to  
Kellogg's  
12/15/87*



To  
Michael D. Minger/Battle Creek

Date  
September 30, 1987

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Analyzed September 29, 1987

87-7-25-3-2	0.0742ppm
87-8- 6-3-3	0.1678ppm
87-9- 8-3-1	0.1350ppm
87-9-18-3-2	0.0431ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*sent to Kellogg's  
10/2/87*



To Michael D. Minger  
Battle Creek

Date July 17, 1987

From Irma Warner - St. Paul

Subject PCB ANALYSES - BATTLE  
CREEK BOARD

Received July 13, 1987

Analyzed July 14, 1987

87-5-15-3-1	0.4047 ppm
87-5-27-3-2	0.0988 ppm

Analyzed July 15, 1987

87-6-13-3-3	0.1048 ppm
86-6-22-3-1	0.4219 ppm

Analyzed July 16, 1987

87-7-8-3-2	0.0438 ppm
------------	------------

Analyses performed using the FDA approved method.

IW/lkb

cc: Gary Kaziukewicz  
Larry Harris



To  
Michael D. Minger/Battle Creek

Date  
May 8, 1987

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 5/6/87

Analyzed 5/7/87

87-2-22-3-1                      0.0462 ppm

87-3-19-3-2                      0.3607 ppm

Analyzed 5/8/87

87-4-5-3-3                      0.0908 ppm

87-4-30-3-2                      0.1542 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*[Handwritten signature]*  
5/13/87



To  
Michael D. Minger/Battle Creek

Date  
February 25, 1987

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

*IW*

Received 2-20-87

Analyzed 2-23-87

86-12-18-3-1

0.2573 ppm

Analyzed 2-24-87

87-1-3-3-2

0.2241 ppm

87-1-25-3-3

0.1032 ppm

87-2-14-3-2

0.1889 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*sent to Kellogg  
3/9/87*



To  
Michael D. Minger/Battle Creek

Date  
December 22, 1986

From  
Irma Warner/St. Paul Mill *Irma*

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 12/18/86

Analyzed 12/19/86

*12/26/86*  
*1/3/86*

86-10-26-3-2  
86-11-3-3-3

0.1628 ppm  
0.2004 ppm

Analyzed 12/20/86

*1/19/86*  
*1/3/86*

86-11-19-3-1  
86-12-3-3-2

0.1081 ppm  
0.2505 ppm

Analyzed 12/21/86

*1/13/86*

86-12-13-3-3

0.2511 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*sent to Kelly G's*  
*1/4/87*



To  
Michael D. Minger/Battle Creek

Date  
October 22, 1986

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

*JW*

Received 10/20/86

Analyzed 10/21/86

<i>12/86 1<sup>st</sup></i>	86-9-12-3-1	0.0438 ppm
<i>123/86 2<sup>nd</sup></i>	86-9-23-3-2	0.1186 ppm

Analyzed 10/22/86

<i>016/86 3<sup>rd</sup></i>	86-10-6-3-3	0.1552 ppm
<i>114/86 1<sup>st</sup></i>	86-10-14-3-1	0.2877 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*sent to  
Lalloggi's 10/27/86*



To  
Michael D. Minger/Battle Creek

Date  
8/12/86

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

*per Gary Kaziukewicz*

Received 8/11/86

Analyzed 8/11/86

86-7-17-3-2	0.0450 ppm
86-7-29-3-3	0.0455 ppm
86-8-5-3-2	0.0898 ppm

Analyzed 8/12/86

86-7-22-3-1	0.1342 ppm
-------------	------------

Analyses performed using the FDA approved method.

th  
cc: Gary Kaziukewicz  
Larry Harris

*Sent to Kellon  
8/14/86*



To  
Michael D. Minger/Battle Creek

Date  
July 7, 1986

From  
Irma Warner/St. Paul Mill

Subject  
**PCB ANALYSES**  
**BATTLE CREEK BOARD**

Received 7/1/86

Analyzed 7/2/86

86-5-23-3-2 0.0296 ppm

86-5-29-3-3 0.0455 ppm

Analyzed 7/3/86

86-6-9-3-1 0.0446 ppm

86-6-21-3-2 0.0643 ppm

86-6-24-3-3 0.0392 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*Sent to Kelpaco  
2/14/86*



To  
Michael D. Minger/Battle Creek

Date  
May 23, 1986

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

*Irma*  
Received 5/21/86

Analyzed 5/22/86

86-4-2-3-3	0.0987 ppm
86-4-13-3-2	0.2247 ppm
86-4-26-3-2	0.0348 ppm

Analyzed 5/23/86

86-5-9-3-1	0.0346 ppm
86-5-17-3-3	0.1302 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*sent to Kelpac 5/29/86*



To  
Michael D. Minger/Battle Creek

Date  
April 4, 1986

From  
Irma Warner/St. Paul Mill

Subject  
PCB ANALYSES  
BATTLE CREEK BOARD

Received 3/31/86

	Analyzed 4/1/86
86-2-16-3-2	0.0186 ppm
<i>2/16/86</i>	Analyzed 4/2/86
86-3-9-3-1	0.0520 ppm
<i>3/9/86</i>	Analyzed 4/3/86
86-3-21-3-3	0.1022 ppm
<i>3/21/86</i>	

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*sent to  
K6 logging  
4/11/86*



To  
Michael D. Minger/Battle Creek

Date  
February 17, 1986

From  
Irma Warner/St. Paul Mill

Subject  
**PCB ANALYSES**  
**BATTLE CREEK BOARD**

Received 2/12/86


Analyzed 2/13/86

85-11-20-3-3	0.0279 ppm
85-12-7-3-2	0.0436 ppm
85-12-19-3-1	0.0401 ppm

Analyzed 2/14/86

86-1-8-3-1	0.0634 ppm
86-1-26-3-2	0.0701 ppm

Analyses performed using the FDA approved method.

  
yd  
cc: Gary Kaziukewicz  
Larry Harris

*Sent to Kelpco  
2/25/86*



To  
Michael D. Minger/Battle Creek

Date  
November 13, 1985

From  
Irma Warner/St. Paul Mill

Subject  
**PCB ANALYSES**  
**BATTLE CREEK BOARD**

Received 11/11/85

Analyzed 11/12/85

28/25 11/2 85-9-28-3-3  
110/85 3 85-10-10-3-3  
104/25 11/2 85-10-14-3-1

0.15 ppm  
0.13 ppm  
0.04 ppm

Analyzed 11/13/85

2 25 2 11/2 85-10-25-3-2  
3 25 11/2 85-11-5-3-2

0.19 ppm  
0.40 ppm

Analyses performed using the FDA approved method.

yd  
cc: Gary Kaziukewicz  
Larry Harris

*Handwritten notes:*  
Sent to Rep...  
11/23/85



To :

Michael D. Minger/Battle Creek

From :

Irma Warner/St. Paul Mill

Received 9/24/85

Analyzed 9/25/85

9/21/85 1<sup>st</sup> Shift 85-8-21-3-1

12/85 3<sup>rd</sup> Shift 85-9-2-3-3

Analyzed 9/26/85

9/8/85 1<sup>st</sup> Shift 85-9-8-3-1

10/8/85 2<sup>nd</sup> Shift 85-9-18-3-2

Date :

September 26, 1985

Subject :

PCB ANALYSES  
BATTLE CREEK BOARD

0-1758 ppm

0.1134 ppm

0.0825 ppm

0.0551 ppm

Analyses performed using the FDA approved method.

yd

cc: Kary Kaziukewicz  
Larry Harris

Sent to Kellogg  
10/7/85



To  
Michael D. Minger/Battle Creek Mill

Date  
August 14, 1985

From  
Irma Warner/St. Paul Mill

Subject  
PCB Analyses  
Battle Creek Board

Received 8/9/85:

Analyzed 8/9/85

85-6-28-3-3                      0.2381 ppm

85-6-22-3-1                      0.1077 ppm

Analyzed 8/10/85

85-6-13-3-2                      0.1866 ppm

85-6-3-3-3                      0.2780 ppm

Analyses performed using the FDA approved method.

IW:yd  
cc: Gary Kaziukewicz  
Larry Harris

sent to  
Kelpaco  
8/21/85



To

Michael D. Minger/Battle Creek

From

Irma Warner/St. Paul Mill

Date

May 21, 1985

Subject

PCB Analyses  
Battle Creek Board

Received 5/15/85

Analyzed 5/16/85

85-3-15-3-3

0.1322 ppm

85-3-25-3-2

0.1791 ppm

Analyzed 5/17/85

85-4-13-3-1

0.1227 ppm

85-4-21-3-2

0.1009 ppm

Analyzed 5/20/85

85-5-12-3-3

0.0230 ppm

Analyses performed using the FDA approved method. Board enclosed.

IW:yd

enc.

cc: Gary Kaziukewicz  
Larry Harris

*sent to  
Kelpaco 6/3/85*



**Champion**  
Champion International Corporation

To

Michael D. Minger/Battle Creek

Date

March 11, 1985

From

Irma Warner/St. Paul Mill

Subject

PCB Analyses  
Battle Creek Board

Received 3/7/85

Analyzed 3-8-85

84-12-19-3-3

0.15 ppm

85-1-7-3-1

0.07 ppm

Analyzed 3-11-85

85-1-25-3-2

0.07 ppm

85-2-14-3-3

0.09 ppm

Analyses performed using the FDA approved method. Board enclosed.

IW:yd

enc.

cc: Gary Kaziukewicz  
Larry Harris

*sent to  
Kelpaco  
3/14/85*

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: January 24, 1985

Laboratory Code: 84993

To: St. Regis Paper Company  
79 West Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Mike Minger

P.O. Number: 31678-4013

Re: Four (4) paperboard samples received December 5, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, ppm (PCB) (Aroclor 1242)</u>
84993 (241)	84-11-30-3-3	<0.5
84993 (242)	84-11-18-3-2	1.3
84993 (243)	84-10-28-3-3	<0.5
84993 (244)	84-10- 8-3-2	<0.5

sent to  
Kellogg's  
1/29/85

WHB/mcm

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: November 1, 1984

Laboratory code: 84836

To: St. Regis Paper Company  
79 West Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Mike Minger

P.O. Number: PM 31678-4013

Re: Three (3) paperboard samples received October 3, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84836 (238)	84-9-28-3-3	<0.5
84836 (239)	84-9-16-3-1	<0.5
84836 (240)	84-8-28-3-2	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*  
William H. Bouma, Ph.D  
Director

WHB/mcm

*Sent  
to Kelpaco  
11/7/84*

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: September 24, 1984

Laboratory code: As below

To: St. Regis Paper Company  
79 West Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Mike Minger

Purchase Order # PM 31678-4013

Re: Three (3) paperboard samples received on dates as indicated  
for Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84703 (235)	84-8-14-3-2	8/16/84	<0.5
84703 (236)	84-7-31-3-3	8/16/84	<0.5
84703 (237)	84-7-19-3-1	8/16/84	<0.5

Sent to  
Kell's  
OK  
10/15/84

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma / mcm*  
William H. Bouma, Ph.D  
Director

WHB/mcm

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: July 23, 1984

Laboratory code: As below

To: St. Regis Paper Company  
79 West Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # PM 31678-4013

Re: Five (5) paperboard samples received on dates as indicated  
for Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84486 (230)	84-6- 3-3-1	6-19-84	<0.5
84486 (231)	84-6-16-3-2	6-19-84	<0.5
84587 (232)	84-7-12-3-2	7-17-84	<0.5
84587 (233)	84-6-30-3-3	7-17-84	<0.5
84587 (234)	84-6-22-3-1	7-17-84	<0.5

*Sent to  
Kellogg's*

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

KAR Laboratories, Inc.

219 Peekstok Road  
Kalamazoo, Michigan 49001

Telephone (616) 381-9666

ANALYTICAL REPORT

Date: June 11, 1984

Laboratory code: 84432

To: St. Regis Paper Company  
79 West Fountain Street  
Battle Creek, MI 49016

Purchase Order # PM 31678-  
4013

Attn: Mr. Edwin Cole

Re: Three (3) paperboard samples received June 1, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84432 (227)	84-5-13-3-1	<0.5
" (228)	84-5-19-3-3	<0.5
" (229)	84-5-29-3-1	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

KAR Laboratories, Inc.

219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: June 6, 1984

Laboratory code: 84382

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # PM 31678-  
4013

Re: Two (2) paperboard samples received May 11, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84382 (225)	84-5- 8-3-3	<0.5
" (226)	84-4-28-3-2	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

*Copy sent to Kellogg*

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: May 10, 1984

Laboratory code: 84294

To: St. Regis Paper Company  
79 W. Fountain St.  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # PM 31678-  
4013

Re: Five (5) paperboard samples received April 17, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
84294 (220)	84-4-12-3-1	<0.5
" (221)	84-4- 7-3-1	<0.5
" (222)	84-3-22-3-2	<0.5
" (223)	84-3-12-3-3	<0.5
" (224)	84-3- 5-3-1	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

*copy sent to Kalamazoo  
31 May 84*

KAR Laboratories, Inc.

219 Peekstok Road  
Kalamazoo, Michigan 49001

Telephone (616) 381-9666

ANALYTICAL REPORT

Date: March 26, 1984

Laboratory code: 84145

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # PM 3128 4013

Re: Two (2) paperboard samples received February 28, 1984 for  
Polychlorinated Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u> (As Aroclor 1242)
84145 (218)	84-2-17-3-1	2/28/84	<0.5
84145 (219)	84-2-23-3-3	2/28/84	<0.5

*sent to Hills*

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

KAR Laboratories, Inc.

219 Peekstok Road  
Kalamazoo, Michigan 49001

Telephone (616) 381-9666

ANALYTICAL REPORT

Date: February 17, 1984

Laboratory code: As below

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # 29432

Re: Seven (7) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u> (As Aroclor 1242)
84057 (211)	83-12-19-3-3	1-31-84	<0.5
84057 (212)	84- 1-10-3-3	1-31-84	<0.5
84057 (213)	84- 1-14-3-1	1-31-84	<0.5
84057 (214)	84- 1-27-3-2	1-31-84	<0.5
84098 (215)	84- 2- 5-3-1	2-14-84	<0.5
84098 (216)	84- 2-12-3-3	2-14-84	<0.5
84098 (217)	84- 1-30-3-3	2-14-84	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

*info sent to Kellogg*

WHB/mcm

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: January 11, 1984

Laboratory code: (see below)

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # 29432

Re: Four (4) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u> (As Aroclor 1242)
83775 (207)	83-11-29-3-1	12-13-83	<0.5
83775 (208)	83-12-10-3-2	12-13-83	<0.5
83791 (209)	83-12-16-3-3	12-20-83	<0.5
83791 (210)	83-12-13-3-1	12-20-83	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

KAR Laboratories, Inc.  
219 Peekstok Road  
Kalamazoo, Michigan 49001  
Telephone (616) 381-9666

ANALYTICAL REPORT

Date: December 9, 1983

Laboratory code (see below)

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # 29432

Re: Four (4) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u> (As Aroclor 1242)
83710 (203)	83-11- 2-3-1	11-16-83	<0.5
83710 (204)	83-11-11-3-2	11-16-83	<0.5
83739 (205)	83-11-14-3-2	11-28-83	<0.5
83739 (206)	83-11-20-3-3	11-28-83	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

1  
WPC  
12/10/83

KAR Laboratories, Inc.

219 Peekstok Road  
Kalamazoo, Michigan 49001

Telephone (616) 381-9666

ANALYTICAL REPORT

Date: November 14, 1983

Laboratory code: (see below)

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016

Purchase order # 20432 4013

Attn: Mr. Edwin Cole

Re: Four (4) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u> <u>(As Aroclor 1242)</u>
83619 (199)	83-10-4-3-1	10/12/83	0.5
83619 (200)	83-10-10-3-2	10/12/83	1.1
83676 (201)	83-10-18-3-1	10/31/83	<0.5
83676 (202)	83-10-27-3-3	10/31/83	<0.5

Respectfully submitted,  
KAR Laboratories, Inc.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

*copy to Kalamazoo*

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: October 10, 1983

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # 29432 4013

Re: Five (5) paperboard samples received for Polychlorinated Biphenyl analysis.

Method:  
A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
83545 (194)	83-9-16-3-2	9-20-83	< 0.5
83558 (195)	83-9-19-3-3	9-23-83	0.7 as Aroclor 1242
83568 (196)	83-9-7-3-3	9-27-83	< 0.5
83568 (197)	83-9-11-3-2	9-27-83	< 0.5
83589 (198)	83-9-28-3-3	10- 3-83	< 0.5

Respectfully submitted,  
KAR LABORATORIES, INC.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

*copy sent to  
1/11/84  
JEB*

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: September 13, 1983

To: St. Regis Paper Company  
79 W. Fountain Street  
Battle Creek, MI 49016

Purchase Order # 29432 4013

Attn: Mr. Edwin Cole

Re: Three (3) paperboard samples received for Polychlorinated Biphenyl analysis.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
K-9996 (191)	83-8-19-3-3	8-23-83	< 0.5
K-10026 (192)	83-8-24-3-2	8-30-83	< 0.5
83502 (193)	83-8-29-3-1	9-01-83	< 0.5

Respectfully submitted,  
KAR LABORATORIES, INC.

*William H. Bouma*

William H. Bouma, Ph.D  
Director

WHB/mcm

*copy sent to client*

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: August 19, 1983

To: St. Regis Paper Company  
79 E. Fountain Street  
Battle Creek, Michigan 49016  
Attn: Mr. Edwin Cole

Purchase Order #PM 29432 4013

Re: Ten (10) paperboard samples received for Polychlorinated Biphenyl analysis.

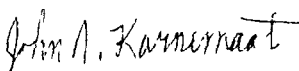
Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>Polychlorinated Biphenyls, ppm (PCB)</u>
K-9932 (181)	83-7-9-3-1	8-3-83	< 0.5
K-9932 (182)	83-7-12-3-2	8-3-83	< 0.5
K-9932 (183)	83-7-15-3-3	8-3-83	< 0.5
K-9932 (184)	83-7-23-3-3	8-3-83	< 0.5
K-9932 (185)	83-7-28-3-3	8-3-83	< 0.5
K-9932 (186)	84-7-31-3-1	8-3-83	< 0.5
K-9942 (187)	83-8-3-3-3	8-5-83	< 0.5
K-9946 (188)	83-8-4-3-2	8-8-83	< 0.5
K-9954 (189)	83-8-8-3-1	8-10-83	< 0.5
K-9970 (190)	83-8-14-3-1	8-16-83	< 0.5

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director (cr)

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: July 18, 1983

To: St. Regis Paper Company                      Laboratory code: K-9815  
79 E. Fountain Street                      Purchase Order # PM 29432 4013  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: One (1) paperboard sample received June 13, 1983 for  
polychlorinated biphenyl (PCB) analysis.

Results:

Method: A.O.A.C. (1980) 29.037

Laboratory code: K-9815 (180)

As Arochlor 1254,  
Polychlorinated  
Biphenyl, ppm

Sample Description

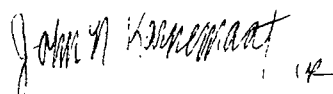
Date Received

83-6-8-3-3

6-13-83

<0.5

Respectfully submitted,  
THE KAR LABORATORY

  
John N. Karnemaat  
Director

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

Copy sent to  
Korodas  
7 May 83

ANALYTICAL REPORT

Date: May 4, 1983

To: St. Regis Paper Company  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attn: Mr. Edwin Cole

Purchase Order # PM 29432 4013

Re: Six (6) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Received</u>	<u>Sample Description</u>	<u>Polychlorinated Biphenyls, (as Aroclor 1254) ppm</u>
K-9596 168	3-20-83	83-3-29-3-3	< 0.5
K-9650 169	4-18-83	83-4-13-3-2	< 0.5
K-9674 170	4-26-83	83-4-18-1-1	< 0.5
K-9674 171	4-26-83	83-4-18-2-1	< 0.5
K-9674 172	4-26-83	83-4-24-3-1	< 0.5
K-9674 173	4-26-83	83-4-21-3-3	< 0.5

FIELD FROM #1

FIELD FROM #2

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

LR

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9886

ANALYTICAL REPORT

Date: March 11, 1983

To: St. Regis Paper Company      Purchase Order # PM 29432 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole


Re: Six (6) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	(As Aroclor 1254) <u>Polychlorinated Biphenyls, ppm</u>
K-9464 (162)	83-1-31-3-2	2-2-83	< 0.5
K-9493 (163)	83-2-9-3-3	2-14-83	< 0.5
K-9504 (164)	83-2-16-3-3	2-18-83	< 0.5
K-9522 (165)	83-2-22-3-3	2-25-83	< 0.5
K-9528 (166)	83-2-28-3-3	3-2-83	< 0.5
K-9541 (167)	83-3-5-3-1	3-8-83	< 0.5

Respectfully submitted,  
THE KAR LABORATORY

  
John N. Karnemaat  
Director

CR

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: February 7, 1983

To: St. Regis Paper Company P.O. # PM 29432 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Five (5) paperboard samples received for Poly-  
chlorinated Biphenyl (PCB) analysis.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Sample Description</u>	<u>Date Received</u>	<u>As Arochlor 1254, Polychlorinated Biphenyl, ppm</u>
K-9390 (157)	83-1-3-3-3	1-5-83	< 0.5
K-9403 (158)	83-1-7-3-1	1-11-83	< 0.5
K-9415 (159)	83-1-13-3-1	1-17-83	< 0.5
K-9436 (160)	83-1-23-3-2	1-25-83	< 0.5
K-9458 (161)	83-1-26-3-3	2-1-83	< 0.5

Respectfully submitted,  
THE KAR LABORATORY



John N. Karnemaat  
Director

CR

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: January 3, 1982

To: St. Regis Paper Company Purchase Order # PM 29432 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Seven (7) paperboard samples received for Polychlorinated  
Biphenyl analyses.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	PCB, ppm (As Aroclor 1254)
K-9322 (150)	12-6-82	82-14-29-3-3	< 0.5
K-9322 (151)	12-6-82	82-11-30-3-1	< 0.5
K-9329 (152)	12-8-82	82-12-2-3-3	< 0.5
K-9340 (153)	12-13-82	82-12-7-3-3	< 0.5
K-9344 (154)	12-14-82	82-12-10-3-1	< 0.5
K-9369 (155)	12-22-82	82-12-15-3-2	< 0.5
K-9375 (156)	12-23-82	82-12-19-3-3	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

*CK*

JNK:cr

8 4 5 1 00

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: December 3, 1982

To: St. Regis Paper Company      Laboratory code: See Below  
79 E. Fountain Street  
Battle Creek, MI 49016

Re: Eleven (11) paperboard samples received for  
Polychlorinated Biphenyl analysis. The samples  
are submitted under Purchase Order # PM 27633 4013.

Results:

Method: A.O.A.C. (1980) 29.037

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (as Aroclor 1254)</u>
K-9225 (139)	11-4-82	82-10-22-3-3	< 0.5
K-9225 (140)	11-4-82	82-11-1-3-3	< 0.5
K-9227 (141)	11-5-82	82-11-3-3-1	< 0.5
K-9231 (142)	11-8-82	82-11-4-3-2	< 0.5
K-9236 (143)	11-9-82	82-11-2-3-1	< 0.5
K-9236 (144)	11-9-82	82-11-5-3-1	< 0.5
K-9254 (145)	11-12-82	82-11-9-3-2	< 0.5
K-9260 (146)	11-15-82	82-11-10-3-1	< 0.5
K-9265 (147)	11-16-82	82-11-11-3-3	< 0.5
K-9287 (148)	11-22-82	82-11-14-3-2	< 0.5
K-9287 (149)	11-22-82	82-11-16-3-3	< 0.5

Respectfully submitted,

THE KAR LABORATORY



John N. Karnemaat  
Director

JNK:cr

12

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

To: St. Regis Paper Company      Date: November 1, 1982  
79 E. Fountain Street      Laboratory code: See Below  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Purchase Order # PM 27633 4013

Nine (9) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Method:

A.O.A.C. (1980) 29.037

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Aroclor 1254)</u>
K-9143 (130)	10-8-82	82-10-4-3-2	< 0.5
K-9143 (131)	10-8-82	82-10-5-3-3	< 0.5
K-9158 (132)	10-13-82	82-10-9-3-3	< 0.5
K-9158 (133)	10-13-82	82-10-10-3-1	< 0.5
K-9169 (134)	10-18-82	82-10-11-3-2	< 0.5
K-9169 (135)	10-18-82	82-10-12-3-3	< 0.5
K-9169 (136)	10-18-82	82-10-14-3-2	< 0.5
K-9173 (137)	10-19-82	82-10-15-3-1	< 0.5
K-9190 (138)	10-25-82	82-10-21-3-3	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

*CR*

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: October 8, 1982

To: St. Regis Paper Company P.O. # PM 27633 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Four (4) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Results:

Method: A. O. A. C. (1980) 29.037

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-9078 (126)	9-16-82	82-9-14-3-1	< 0.5
K-9086 (127)	9-20-82	82-9-16-3-2	< 0.5
K-9088 (128)	9-21-82	82-9-17-3-1	< 0.5
K-9104 (129)	9-27-82	82-9-23-3-1	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*  
John N. Karnemaat  
Director

*CA*

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: September 20, 1982

To: St. Regis Paper Company P. O. # PM 27633 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Six (6) paperboard samples received for Polychlorinated  
Biphenyl analysis.

Results:

Method: A.O.A.C. (1980) 29.037

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-9027 (120)	8-30-82	82-8-26-3-2	< 0.5
K-9060 (121)	9-09-82	82-9-7-3-3	< 0.5
K-9062 (122)	9-10-82	82-9-8-3-1	< 0.5
K-9069 (123)	9-14-82	82-9-11-3-3	< 0.5
K-9069 (124)	9-14-82	82-9-12-3-1	< 0.5
K-9073 (125)	9-15-82	82-9-13-3-2	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director

*CP*

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: August 27, 1982

To : St. Regis Paper Company      P.O. # PM 27633 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re : Six (6) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.

Results:

Method: A.O.A.C. (1980) 29.037

<u>Laboratory code</u>	<u>Date submitted</u>	<u>Sample description</u>	<u>PCB, ppm</u> <u>(As Arochlor 1254)</u>
K-8978 (114)	8-18-82	82-8-15-3-2	< 0.5
K-8978 (115)	8-18-82	82-8-16-3-3	< 0.5
K-8987 (116)	8-19-82	82-8-17-3-1	< 0.5
K-8993 (117)	8-20-82	82-8-18-3-2	< 0.5
K-8997 (118)	8-23-82	82-8-19-3-3	< 0.5
K-9002 (119)	8-25-82	82-8-20-3-1	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*  
John N. Karnemaat  
Director *NK*

JNK:nem

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: August 13, 1982

To: St. Regis Paper Company      Purchase Order # PM 27633 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Eight (8) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.


Results:

Method: A.D.A.C. (1980) 29.037

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm</u> <u>(As Arochlor 1254)</u>
K-8908 (106)	7-23-82	82-7-20-3-1	1.4
K-8908 (107)	7-23-82	82-7-21-3-3	1.3
K-8917 (108)	7-28-82	82-7-22-3-2	< 0.5
K-8917 (109)	7-28-82	82-7-23-3-1	< 0.5
K-8917 (110)	7-28-82	82-7-24-3-3	< 0.5
K-8917 (111)	7-28-82	82-7-26-3-3	< 0.5
K-8926 (112)	7-28-82	82-7-27-3-1	< 0.5
K-8949 (113)	8-05-82	82-7-29-3-1	0.9

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director

JNK:cr



THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666  
ANALYTICAL REPORT

Date: August 3, 1982

To: St. Regis Paper Company                      Purchase Order # PM 27633 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Five (5) paperboard samples received for Polychlorinated  
Biphenyl (PCB) analysis.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8876 (101)	7-14-82	82-7-11-3-1	1.0
K-8890 (102)	7-19-82	82-7-12-3-3	1.7
K-8890 (103)	7-19-82	82-7-13-3-1	1.1
K-8893 (104)	7-20-82	82-7-15-3-3	0.9
K-8893 (105)	7-20-82	82-7-16-3-2	1.0

Respectfully submitted,

THE KAR LABORATORY



John N. Karnemaat  
Director

JNK:cr



THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: July 15, 1982

To: St. Regis Paper Company                      Purchase Order # PM 27633 4013  
79 E. Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Re: Eight (8) paperboard samples received for Polychlorinated  
Biphenyl analysis.


Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8847 (93)	7-01-82	82-6-29-3-1	< 0.5
K-8851 (94)	7-02-82	82-6-30-3-1	< 0.5
K-8857 (95)	7-07-82	82-7-1-3-1	< 0.5
K-8861 (96)	7-07-82	82-7-2-3-1	< 0.5
K-8865 (97)	7-09-82	82-7-7-3-1	< 0.5
K-8869 (98)	7-12-82	82-7-8-3-1	< 0.5
K-8873 (99)	7-13-82	82-7-9-3-1	< 0.5
K-8873 (100)	7-13-82	82-7-10-3-1	< 0.5

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director

JNK:cr



THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: July 2, 1982

To: St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Purchase Order # PM 27633 4013

Re: Six (6) paperboard samples received for Polychlorinated  
Biphenyls (PCB) analysis.

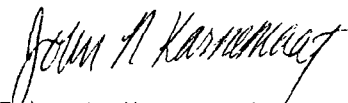
Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (as Aroclor 1254)</u>
K-8792 (87)	6-14-82	82-6-10-3-3	< 0.5
K-8798 (88)	6-15-82	82-6-11-3-1	< 0.5
K-8799 (89)	6-16-82	82-6-14-3-1	< 0.5
K-8811 (90)	6-21-82	82-6-15-3-1	< 0.5
K-8816 (91)	6-22-82	82-6-18-3-1	< 0.5
K-8838 (92)	6-30-82	82-6-28-3-1	< 0.5

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director

CR

JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: June 18, 1982

To: St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Purchase Order # PM 27633 4013

Re: Twelve (12) paperboard samples received for Polychlorinated  
Biphenyls (PCB) analysis.

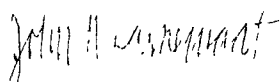
Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8751 (75)	5-28-82	82-5-26-3-1	<0.5
K-8751 (76)	5-28-82	82-5-25-3-3	<0.5
K-8762 (77)	6-03-82	82-6-1-3-2	<0.5
K-8762 (78)	6-03-82	82-6-1-3-3	<0.5
K-8773 (79)	6-07-82	82-6-2-3-1	<0.5
K-8773 (80)	6-07-82	82-6-2-3-2	<0.5
K-8773 (81)	6-07-82	82-6-2-3-3	<0.5
K-8776 (82)	6-09-82	82-6-3-3-1	<0.5
K-8776 (83)	6-09-82	82-6-4-3-1	<0.5
K-8776 (84)	6-09-82	82-6-5-3-1	<0.5
K-8776 (85)	6-09-82	82-6-6-3-1	<0.5
K-8776 (86)	6-09-82	82-6-7-3-1	<0.5

Respectfully submitted,

THE KAR LABORATORY

  
John N. Karnemaat  
Director

CP

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: May 28, 1982

To : St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Purchase Order # PM 27633 4013

Re: Eight (8) paperboard sample received in May 1982 for  
Polychlorinated Biphenyls (PCB) analysis.

Method: A.O.A.C. (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8705 (67)	5-18-82	82-5-7-3-2	0.7
K-8719 (68)	5-20-82	82-5-18-3-1	0.6
K-8719 (69)	5-20-82	82-5-18-3-2	0.6
K-8719 (70)	5-20-82	82-5-18-3-3	0.5
K-8727 (71)	5-21-82	82-5-19-3-1	< 0.5
K-8727 (72)	5-21-82	82-5-19-3-2	< 0.5
K-8727 (73)	5-21-82	82-5-19-3-3	< 0.5
K-8734 (74)	5-24-82	82-5-20-3-1	< 0.5

Respectfully submitted,

THE KAR LABORATORY



John N. Karnemaat  
Director



JNK:cr

THE KAR LABORATORY  
219 PEEKSTOK ROAD  
KALAMAZOO, MICHIGAN 49001  
TELEPHONE (616) 381-9666

ANALYTICAL REPORT

Date: May 18, 1982

To: St. Regis Paper Company  
79 East Fountain Street  
Battle Creek, MI 49016  
Attention: Mr. Edwin Cole

Purchase Order # PM 27633 4013

Re: Eleven (11) paperboard samples received May 4, 1982 and May 10, 1982  
for Polychlorinated Biphenyls (PCB) analysis.

Method: AOAC (1980) 29.037

Results:

<u>Laboratory Code</u>	<u>Date Submitted</u>	<u>Sample Description</u>	<u>PCB, ppm (As Arochlor 1254)</u>
K-8652 (56)	5-04-82	82-4-28-2-2	< 0.5
K-8652 (57)	5-04-82	82-4-28-2-3	< 0.5
K-8652 (58)	5-04-82	82-4-28-3-1	< 0.5
K-8652 (59)	5-04-82	82-4-28-3-2	< 0.5
K-8652 (60)	5-04-82	82-4-28-3-3	< 0.5
K-8652 (61)	5-04-82	82-4-30-3-1	< 0.5
K-8652 (62)	5-04-82	82-4-30-3-2	< 0.5
K-8667 (63)	5-10-82	82-5-5-3-1	< 0.5
K-8667 (64)	5-10-82	82-5-5-3-2	< 0.5
K-8667 (65)	5-10-82	82-5-5-3-3	< 0.5
K-8667 (66)	5-10-82	82-5-6-3-1	< 0.5

Respectfully submitted,

THE KAR LABORATORY

*John N. Karnemaat*

John N. Karnemaat  
Director *CR*

JNK:cr



# American Paper Institute, Inc.

260 Madison Avenue, New York, N.Y. 10016/(212) 340-0600

cable address: AMPAPINST New York

Recycled Paperboard Division

## MEMORANDUM

April 10, 1984

TO: Members of the Recycled Paperboard Division

FROM: William E. Hancock *BEH*

The attached article on PCBs in printing inks will be of interest to recyclers of old newspapers. The manufacturer has been identified and the matter appears to be under control. Those purchasing significant quantities of over issue news may wish to determine the nature of the inks being used during the past few months.

*Check Kellogg's once/wk.  
for PCBs: 82-1111  
< 1.5 ppb*

*Hamelink*

WEH/vm

Attachment

List: 400-05  
440-20

# Discovery of PCBs in yellow inks sets off probes in California

The discovery of unusually high levels of a form of the toxic chemical PCB in yellow inks used at the San Jose (Calif.) Mercury News has prompted investigations by the U.S. Environmental Protection Agency and state industrial safety and health officials, new procedures by the pigment supplier, an alert to ink companies from ANPA and lots of yellow-ink testing.

The only two ink companies thought to be involved and the yellow-pigment supplier have recovered the suspect inks and are now using only tested yellow pigment for newspaper inks.

At press time, the potential danger, if any, to those exposed to the ink was still unclear. It also was unknown how widespread the problem might be. At least three other California newspapers—The Sacramento Bee, The Peninsula Times Tribune of Palo Alto and The Tribune of Oakland—reported finding unacceptable levels of PCBs in their yellow inks after the San Jose incident was made public.

Discovery of the toxic ink was first made by the Mercury News in January, according to publisher P. Anthony Ridder. The paper issued a statement on the situation March 16, after a switch to another ink supply company and efforts to cleanse the inking system of contaminants failed to rid the system of the PCBs.

ANPA has issued a request to suppliers of color ink to the newspaper business that they test their products to ensure they are PCB-free.

The two manufacturers of inks that officials at the Mercury News described as containing a PCB "contamination" said they have taken steps to prevent a recurrence. However, neither company—Cal/Ink in Berkeley, Calif., and United States Printing Ink in San Leandro, Calif.—has identified all the newspapers to which the contaminated ink was supplied.

The producer of the yellow pigment used by both manufacturers—Magruder Color Co. of Elizabeth, N.J.—said an effort is being made to monitor its production processes more closely. And the Mercury News said it will conduct periodic monitoring of the yellow inks it uses—about 1.2 percent of its total ink usage.

The "contamination of a single dichlorobiphenyl isomer" was found in "routine testing" at the Knight-Ridder Newspa-

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*The incident at the San Jose Mercury News prompted new procedures by the pigment supplier, an alert to ink companies from ANPA and lots of yellow-ink testing.*

---

pers-owned Mercury News, according to the newspaper's statement. Dichlorobiphenyl is a member of the group of synthetic chemical compounds known as polychlorinated biphenyls—or PCBs.

According to John B. Hammett, senior vice president, the tests were initiated at the request of the paper's safety manager, Lynn Frank, and were conducted by its insurance carrier, The Traveler's Insurance Co.

Analyses by another California laboratory and by ANPA at its lab at The Newspaper Center in Reston, Va., confirmed the Traveler's findings, he said.

**Concentration level.** The San Francisco regional office of EPA announced March 23 that results of the Mercury News' testing of the suspect inks for PCBs ranged from "non-detectable" to 4,100 parts per million. EPA spokesman Phil L. Bobel cautioned, however, that the chemical analysis for such PCB tests "is a difficult one, and we are not positive that the Mercury News' results reflect the actual values of PCBs."

Indeed, earlier estimates—from Publisher Ridder in a March 17 story in the Mercury News and from an official at the Magruder company, the pigment supplier—placed the level at about 1,000 ppm.

That is considerably above EPA-mandated levels for the manufacture, processing, distribution in commerce and use of PCBs. Concentrations above 50 parts per million generally have been prohibited by the EPA since 1979 under authority of the Toxic Substances Control Act.

However, EPA has exempted some companies, including some ink manufacturers, from that limit and is in the process of drafting a new regulation on the

"uncontrolled use" of PCBs. An EPA specialist in the San Francisco regional office told presstime that because PCBs may be created as a by-product of the pigment-making process and are not deliberately inserted into the pigments, the use of PCBs in ink is considered an "uncontrolled use."

The San Francisco EPA office began an investigation into the San Jose case after reports appeared in the press. Office spokesman Bobel said, after announcing initial results from the Mercury News' tests, that EPA officials "don't anticipate that there would be a problem for the reader of the newspaper in any event."

A spokesman at EPA headquarters in Washington, D.C., said the agency considers PCBs to be a "potential human carcinogen." According to EPA's fact sheet on PCBs, "well documented tests on laboratory animals show that various levels of PCBs can cause reproductive effects, gastric disorders, skin lesions and cancerous tumors." PCBs may enter the body through the lungs, the gastrointestinal tract and the skin, and are stored in fatty tissues and a variety of organs, according to the fact sheet.

The Division of Occupational Safety and Health of the California Department of Industrial Relations also is investigating the San Jose incident and is conducting its own tests of the inks involved.

At this time, California does not have a state standard on PCBs in liquids, said division spokeswoman Dianne H. Deinstein, although a draft regulation would set the same 50 ppm limit as the EPA. However, the state does regulate airborne PCBs, along with other airborne contaminants. The division's probe will take about three weeks, Deinstein said.

**ANPA action.** ANPA has written to 18 manufacturers of color ink calling the incident to their attention and asking them to conduct tests of their yellow inks "to be certain that they are free of PCBs." The letter, from ANPA Executive Vice President Jerry W. Friedheim, said ANPA was "prepared to be of appropriate assistance" to the ink companies in this effort.

"These manufacturers are virtually all the known suppliers of color ink to newspapers," according to ANPA Vice President/Technical William D. Rinehart.

Friedheim said ANPA first learned of the ink problem in San Jose in January when it was asked to confirm another laboratory's tests. After doing so, the Association was told that the tested batch of ink had been replaced. ANPA had no knowledge of the most recent situation until the newspaper discussed it last month, he said.

Pressroom employees at the Mercury News were informed of the ink contamination March 16, the day before Cal/Ink personnel conducted a day-long purging of the paper's yellow inking systems to get rid of any residue of contaminated ink.

Upon learning of the situation, the pressmen "complained angrily" that they weren't told earlier, according to a story published in the Mercury News March 19.

"We are the first ones to admit we are now open to second guessing as to why we didn't tell them back on Jan. 24," said Hammert. The reasons were, he added, that laboratory tests results at first conflicted and that the company had hoped to be able to report to employees that the contamination had been eliminated. He also said the newspaper was under no "legal requirement" to immediately inform them of the finding.

According to Hammert, company officials have held several meetings with representatives of the pressmen's union, have offered medical assistance to the employees and made sure that the two employees who mix ink have had a medical check-up.

A spokesman for Knight-Ridder Newspapers Inc. said the company did not believe that contaminated ink was being used by any of its other newspapers, but that all of them are having ink tests made.

—Margaret Genovese

## OSHA chief quits

Thorne G. Auchter resigned as head of the federal Occupational Safety and Health Administration, effective March 30. He became president of a Kansas construction company. □

# Debate continues on VDT hazard issue

**C**harges and countercharges continue to swirl around the question of possible health hazards connected with the use of video display terminals, with no indication that the issue is abating.

At the federal level, Congress is conducting hearings—almost weekly—which could continue into the summer.

At the state level, bills affecting the use of VDTs have been introduced in 11 states. Connecticut and Maine have enacted laws relating to use of the machines [presstime, July 1983, p. 27].

ANPA is scheduled to testify in Washington, D.C., June 5 before the Health and Safety Subcommittee of the House Committee on Education and Labor.

In the past, ANPA has maintained that its experience in all types of radiation testing on VDTs showed no harm could come from exposure to them. The Association's Director/Technical Research George Cashau testified in that vein at state VDT hearings March 15 in Maine and March 16 in Connecticut.

But the congressional subcommittee has heard much other testimony alleging harmful effects from VDT use.

A representative of the Communications Workers of America told the subcommittee March 13 that "continued wear and tear" of the musculo-skeletal system of VDT operators "may result in a gradual deterioration of joint tissues."

"Of particular interest is the question of whether there is a link between VDT exposure and birth defects and spontaneous abortions," said David E. LeGrande, the CWA's occupational safety and health representative. "This concern has arisen as a result of the identification of several clusters of reproductive problems among VDT operators."

LeGrande said another issue "is the relationship between the possible inhalation of polychlorinated biphenyls (PCBs) from VDTs." PCBs are chemicals suspected of causing cancer.

"Additional scientific work needs to be performed to confirm or negate existing scientific findings," he said.

LeGrande urged that the subcommittee encourage NIOSH to initiate "comprehensive" research regarding potential health hazards associated with VDTs and to consider the adoption of legislation on VDT work environments.

Jackie Ruff, executive director of District 925 of the Service Employees International Union, told the subcommittee Feb. 28 of findings of a possible "cluster" of "pregnancy problems" at the United Airlines' West Coast regional office in San Francisco. (A United Airlines spokesman said there is no evidence that radiation levels from the company's VDTs reach or exceed any health and safety standards.)

Meanwhile, in Canada, the Hydro-Electric Power Commission of Ontario announced that a study by the government-owned electric power company showed that the electrical and magnetic fields created by VDTs fall well within the levels considered safe for operators. Hydro studied 63 terminals representing 40 different brands.

Also in Canada, a University of New Brunswick study determined that visual acuity can be adversely affected by as few as 15 minutes spent reading text from a VDT. The study said that VDT use causes fatigue in the edge of the retina, which affects peripheral vision.

In the United States, the states besides Maine and Connecticut in which VDT legislation has been introduced are California, Hawaii, Illinois, Massachusetts, New York, Ohio, Oregon, Rhode Island and Wisconsin. □

## OSHA cancels 153 safety regulations as unnecessary

**T**he Occupational Safety and Health Administration has revoked 153 regulations it said were unnecessary. All but four were "advisory" in nature: They used the word "should" or similar language instead of the mandatory word "shall."

OSHA decided to keep 41 of the "should" standards, including one involving workplace noise. Appearing as a footnote to an OSHA chart on permissible noise exposure levels, it says that when a worker is exposed to two or more periods of noise of different levels, their combined effect "should" be taken into account. OSHA said that the footnote is tied to the mandatory provisions of the chart and that the two must be read together [presstime, July 1982, p. 23]. □

## 1. Government Regulations

C. E. Gehr reported having received information regarding PCB regulations which would apply to our industry. The regulations proposed by EPA (Federal Register of December 8, 1983) deal with the manufacture and processing of products containing PCB, including incidental PCB (as is the case in recycled paper and board).

These proposed regulations are reported to include:

1. A limit of 25 ppm annual average PCB content, with a maximum of 50 ppm (presumably a point-in-time maximum, but this is not a certainty).
2. A 10-ppm air-emission limit.
3. Process waste containing more than 50 ppm would have to be disposed of by high-temperature incineration or by appropriate landfill procedures.
4. Monitoring records, if made, would have to be retained for a stated period.

Omitted from the proposed regulations are liquid effluent limitations and provisions for an annual limit on the cumulative amount of PCB handled.

It should be noted that these regulations would apply to all products manufactured, not merely food-packaging board. The latter are also subject to separate FDA regulations recently issued.

If the 50-ppm figure is indeed a point-in-time limit, some mill managements may want to review their raw material purchase and monitoring practices.

## 2. Chemicals to Enhance Refining

In response to an inquiry from the subcommittee, Prof. G. Graham Allan, of the University of Washington, expressed interest in extending his work with refining enhancement to include recycled fibers. He suggested two possible lines of approach: the addition of materials which would accelerate the refining process, or the addition of polymers to replace all or part of the refining. (The latter approach would include an attempt to develop a material more effective for this purpose than those currently available.)

The task force tended to agree with the Stock Preparation Task Force in endorsing the first of these approaches, but were reluctant to approve an appropriation request without seeing a formal proposal. It was therefore agreed to conduct a mail ballot on

cc - Don O.  
less S.  
John N.

## DORSEY & WHITNEY

A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

350 PARK AVENUE  
NEW YORK, NEW YORK 10022  
(212) 415-9800  
1330 CONNECTICUT AVENUE, N. W.  
WASHINGTON, D. C. 20036  
(202) 857-0700  
3 GRACECHURCH STREET  
LONDON EC3V 0AT, ENGLAND  
01-929-3334  
36, RUE TRONCHET  
75009 PARIS, FRANCE  
01-42-66-59-49  
FAR EAST FINANCE CENTER  
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MINNEAPOLIS, MINNESOTA 55402  
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TELEX 29-0605  
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ROCHESTER, MINNESOTA 55903  
(507) 288-3156  
315 FIRST NATIONAL BANK BUILDING  
WAYZATA, MINNESOTA 55391  
(612) 475-0373  
1200 FIRST INTERSTATE CENTER  
BILLINGS, MONTANA 59103  
(406) 252-3800  
201 DAVIDSON BUILDING  
GRBAT FALLS, MONTANA 59401  
(406) 727-3632  
127 EAST FRONT STREET  
MISSOULA, MONTANA 59802  
(406) 721-6025

Don -  
Pls Flu  
and insure  
compliance,  
T.R.  
Jim

May 30, 1990

Mr. Mark Ridgeway  
Waldorf Corporation  
2250 Wabash Avenue  
St. Paul, Minnesota 55114

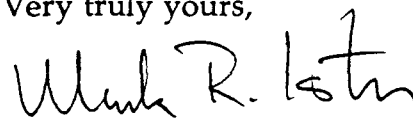
Dear Mark:

I have received the executed Consent Agreement with the EPA concerning the Battle Creek PCB matter. The terms of the Consent Agreement require the payment by Waldorf of \$10,000 to conform with current PCB regulations. The payment must be submitted to the government before June 15, 1990. If you send me a certified check made payable to the "Treasurer, United States of America," I will direct the payment to the appropriate EPA officials.

By copy of this letter, I am again reminding the Battle Creek facility that Waldorf must inform the EPA by July 31, 1990, or as soon thereafter as possible, of the scheduled disposal and replacement of two PCB transformers by General Electric. The documentation reflecting the replacement must be transmitted to Terry Bonace at USEPA, 5SPT, 230 South Dearborn, Chicago, Illinois 60604.

Please contact me if you have any questions regarding this matter.

Very truly yours,



Mark R. Kaster

MRK/aj  
Enclosures  
cc: Mr. Jim Oswald ✓



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

230 SOUTH DEARBORN ST.

CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:

5SPT-7

MAY 23 1990

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Mark R. Kaster  
Dorsey & Whitney  
2200 First Bank Place East  
Minneapolis, Minnesota 55402

Re: Waldorf Corporation  
TSCA-V-C-08-90

Dear Mr. Kaster:

Enclosed please find a duplicate original of a fully executed Consent Agreement and Final Order (CAFO) in resolution of the above-captioned case. One of the originals was filed with the Regional Hearing Clerk.

Within 30 days of filing of the executed CAFO with the Regional Hearing Clerk, please forward by cashier's or certified check the civil penalty in the amount of \$10,000. The check must be payable to the "Treasurer, United States of America," and sent directly to:

U. S. Environmental Protection Agency  
Region V  
P.O. Box 70753  
Chicago, Illinois 60673

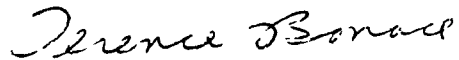
Please send a copy of the transmittal letter for the Clerk and a copy of the check to me and to:

- 2 -

Branch Secretary  
Pesticides and Toxic  
Substances Branch (5SPT)  
Region V  
U.S. Environmental Protection Agency  
230 South Dearborn  
Chicago, Illinois 60604

Thank you for your cooperation in resolving this matter.

Sincerely yours,

A handwritten signature in cursive script, reading "Terence Bonace".

Terence Bonace  
PCB Control Section

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION V

IN RE: )  
 )  
WALDORF CORPORATION, ) DOCKET NO. TSCA-V-C-08-1990  
 )  
 ) CONSENT AGREEMENT  
RESPONDENT )  
 ) AND  
 ) FINAL ORDER

---

CONSENT AGREEMENT



1. WHEREAS, this civil administrative proceeding for the assessment of a penalty was initiated pursuant to Section 16(a) of the Toxic Substances Control Act ("TSCA"), 15 U.S.C. 2615(a);

2. WHEREAS, a Complaint and Notice of Opportunity for Hearing was filed by Complainant on December 12, 1989, alleging that Respondent violated Section 6 of TSCA, 15 U.S.C. § 2616, by improper recordkeeping use and marking of PCB's in violation of 40 CFR § 761;

3. WHEREAS, the parties held a telephone settlement conference on January 19, 1990 and February 20, 1990 to discuss the possibility of settlement.

4. WHEREAS, the parties have agreed to a settlement of the matter in controversy through the entry of this Consent Agreement and Final Order;

5. NOW, THEREFORE, for the purpose of this proceeding only and without prejudice to any other proceeding:

6. Respondent admits the jurisdictional allegations set forth in the Complaint.

7. Respondent neither admits nor denies the facts stated in the Complaint.

8. Respondent waives its right to a hearing on the allegations of the Complaint.

9. Upon receipt of proper documentation of annual PCB recordkeeping, Complainant recalculated the proposed penalty from \$45,000 to \$37,000.

10. Respondent states that it mitigated the allegations of the complaint through the following activities: The Respondent has supplied documentation to reconstruct its annual documents, all entry ways to PCB storage areas have been marked, firewalls have been constructed, and local fire officials have been notified of the location of PCB equipment.

11. In addition to the remedial steps taken as listed in paragraph 10, above, the Respondent has committed to a replacement program to replace its PCB transformers with non-PCB transformers by 1992 at a total cost of approximately \$600,000. By July 1990, or as soon thereafter as reasonably possible, but no later than December 31, 1990 unless otherwise reasonably agreed to by the parties, the Respondent will dispose and replace two PCB transformers at an estimated cost of \$187,000. Respondent will forward documentation reflecting the replacement by August 1, 1990, or as soon thereafter as possible, to Terry Bonace at U.S. EPA, 5SPT, 230 S. Dearborn, Chicago, IL 60604.

12. Respondent states that it is in compliance with TSCA and all applicable federal regulations concerning PCB's at its Angell Street facility in Battle Creek, Michigan.

13. In recognition of the corrective responses taken by the Respondent and in settlement of this action the Complainant has reduced the penalty to \$10,000, from the total recalculated penalty of \$37,000. In the event that Respondent fails to complete any of the terms of this agreement, the entire proposed penalty will be due on demand.

14. The Respondent shall pay a civil penalty of \$10,000 by certified check payable to "Treasurer, United States of America" and sent to U.S. Environmental Protection Agency, Region V, P.O. Box 70753, Chicago, Illinois 60673, within 20 days after the filing of a fully executed copy of this Consent Agreement and Final Order with the Regional Hearing Clerk. A copy of this check shall be sent to the Regional Hearing Clerk (5MFA-14) and to the Branch Secretary, Pesticide and Toxic Substances Branch (5-SPT-7), U.S. Environmental Protection Agency, 230 South Dearborn Street, Chicago, Illinois 60604. Notice of payment shall be given simultaneously to Counsel for Complainant (5CA-TUB-3).

15. Failure to comply with paragraph 14 shall result in referral of this matter to the U.S. Department of Justice for collection of the \$37,000 penalty proposed in the Complaint.

16. Interest shall accrue on any amounts overdue under the terms of this Consent Agreement and Final Order at the rate established by the Secretary of the

Treasury, pursuant to 31 U.S.C. 3717. A late payment handling charge of \$20.00 will be imposed after thirty (30) days with an additional charge of \$10.00 for each subsequent thirty-day period over which an unpaid balance remains. In addition, six percent per annum penalty will be applied on any principal amount not paid within ninety (90) days of the date that this Consent Agreement and Final Order is signed by the Regional Administrator.

17. Respondent consents to the terms of this Consent Agreement and Final Order and to the assessment and payment of the \$10,000 civil penalty.

18. Nothing in this Consent Agreement and Final Order shall constitute any admission by Respondent of (i) any of the allegations of the Complaint, or (ii) any liability of Respondent for violation alleged by the Complainant.

19. This Consent Agreement and Final Order is a final order for purposes of 45 Fed Reg. 59770 (September 10, 1980).

Dated: \_\_\_\_\_

May 1, 1990

WALDORF CORPORATION  
Respondent

By: \_\_\_\_\_

Its: \_\_\_\_\_

Vice President

UNITED STATES ENVIRONMENTAL  
PROTECTION AGENCY, Complainant

Dated: 5/16/90

By: William H. Sanders III  
William H. Sanders III, P.E.  
Director  
Environmental Sciences Division  
U.S. Environmental Protection  
Agency  
230 South Dearborn Street  
Chicago, Illinois 60604

Re: Waldorf Corporation  
TSCA-V-C-08-1990

**FINAL ORDER**

It is so Ordered, as agreed to by the parties and as stated in the Consent Agreement. This Order shall become effective immediately.

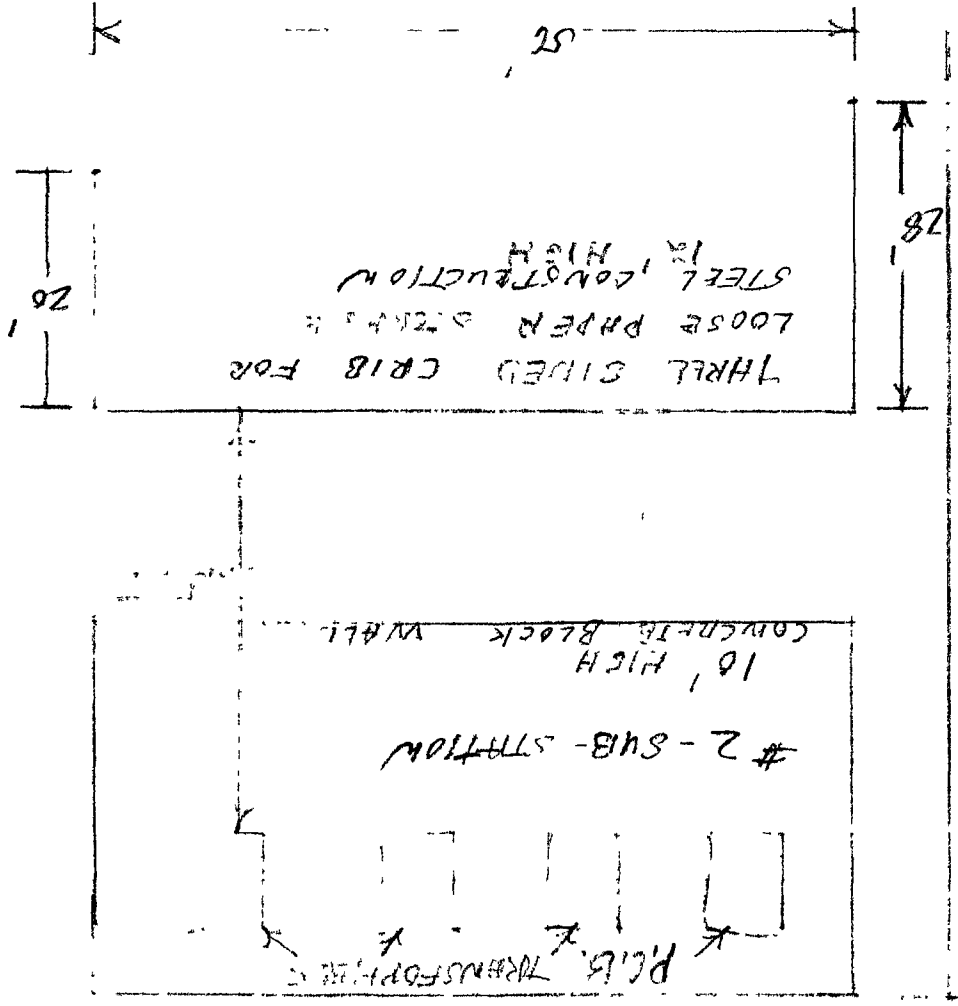
Dated: May 18<sup>th</sup>, 1990

Valdas V. Adamkus  
Valdas V. Adamkus  
Regional Administrator  
U.S. Environmental Protection  
Agency, Region V  
230 South Dearborn Street  
Chicago, Illinois 60604

BASEMENT OF BAPTIST ROOM

COUNTERTOP ROOM  
HALL

TRANSITION AREA



MAX TO PAPER MASTER  
612-840-2544

WALDOF CORP  
BATTLE CREEK  
DON OPALA

cc - Staff  
FYF JAW 4/24

# DORSEY & WHITNEY

A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

1150 PARK AVENUE  
NEW YORK, NEW YORK 10022  
(212) 415-9200

1330 CONNECTICUT AVENUE, N. W.  
WASHINGTON, D. C. 20006  
(202) 857-0700

3 GRACECHURCH STREET  
LONDON EC3Y 0AT, ENGLAND  
01-929-3334

36, RUE TRONCHET  
75009 PARIS, FRANCE  
01-42-66-59-49

FAR EAST FINANCE CENTER  
HONG KONG  
852-5-8612333

2200 FIRST BANK PLACE EAST  
MINNEAPOLIS, MINNESOTA 55402  
(612) 340-2600  
TELEX 29-0605  
FAX (612) 340-2868

MARK R. KASTER  
(612) 340-7815

1440 FIRST NATIONAL BANK BUILDING  
ROCHESTER, MINNESOTA 55903  
(507) 288-3156

315 FIRST NATIONAL BANK BUILDING  
WAYZATA, MINNESOTA 55391  
(612) 475-0373

1800 FIRST INTERSTATE CENTER  
BILLINGS, MONTANA 59103  
(406) 252-3800

201 DAVIDSON BUILDING  
GREAT FALLS, MONTANA 59401  
(406) 727-3832

127 EAST FRONT STREET  
MISSOULA, MONTANA 59802  
(406) 721-6023

June 14, 1990

## CERTIFIED MAIL RETURN RECEIPT REQUESTED

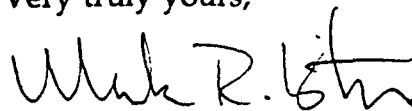
U.S. Environmental Protection Agency  
Region V  
P. O. Box 70753  
Chicago, Illinois 60673

Re: Waldorf Corporation  
TSCA-V-C-08-90

Dear Sir or Madam:

I am enclosing herewith the \$10,000 payment required under the  
Consent Agreement and Final Order executed in the above-referenced matter.

Very truly yours,



Mark R. Kaster

MRK/jn

Enclosure

cc: Mr. Terence Bonace  
Branch Secretary (5 SPT)

bcc: Mr. Mark Ridgeway  
Mr. Les Spurgeon  
Mr. Jim Oswald ✓

5-15-90

On 5-15-90 we placed (4) transformers in the metal dumpster for disposal. The transformers were drained of oil and certified on 5-31-79, by S.D. Myers Inc. The oil was placed in our used oil drums. The transformers were drained from a plug in the very bottom and the tops are open per inspection.

Mike Suter

Transformer Numbers

2235933

2235934

1373000

2354109



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

230 SOUTH DEARBORN ST.

CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF

5SPT-7

DEC 12 1989

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Leslie M. Sturgeon  
Registered Agent for:  
Waldorf Corporation  
177 Angell Street  
Battle Creek, Michigan 49017

Re: Complaint and Notice of  
Opportunity for Hearing  
Waldorf Corporation

Dear Mr. Sturgeon:

Enclosed please find a Complaint and Notice of Opportunity for Hearing concerning violations of the Toxic Substances Control Act (TSCA), 15 U.S.C. Section 2601 et seq., discovered by a United States Environmental Protection Agency inspector at the Waldorf Corporation, 177 Angell Street, Battle Creek, Michigan.

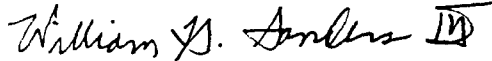
I recommend that you carefully read and analyze the enclosed Complaint and Rules of Practice, 40 C.F.R. Part 22, to determine the alternatives available in responding to the alleged violations, proposed penalties and opportunity for a hearing. Please note that each day the violations cited herein continue constitutes a new violation for which additional penalties may be imposed.

If the Waldorf Corporation chooses to request a hearing to contest the facts alleged in the Complaint, an Answer and Request for Hearing is required to be filed with the Regional Hearing Clerk within the prescribed time limit of twenty (20) days following service of this Complaint. A copy of your Answer and Request for Hearing should be sent to Jennifer Costanza, Assistant Regional Counsel, Office of Regional Counsel (5CA-TUB-3), U.S. Environmental Protection Agency, Region V, 230 South Dearborn Street, Chicago, Illinois 60604. Ms. Costanza's telephone number is (312) 886-6729.

Failure to respond to this Complaint and Notice of Opportunity for Hearing by specific answer within twenty (20) days of your receipt of this Complaint constitutes your admission of the allegations made in the Complaint. Such failure shall result in the issuance of a Default Order imposing the penalties proposed herein without further proceedings.

Whether or not you request a hearing, an informal conference may be requested in order to discuss the facts of this case and to arrive at a settlement. If you have any questions about this matter or desire to request an informal conference for the purpose of settlement, please write to Terence Bonace, PCB Control Section (5SPT-7), U.S. Environmental Protection Agency, 230 South Dearborn Street, Chicago, Illinois 60604, or you may telephone him at (312) 886-6219.

Sincerely yours,

A handwritten signature in cursive script that reads "William H. Sanders III". The signature is written in dark ink and includes a stylized "III" at the end.

William H. Sanders III, P.E.  
Director, Environmental Sciences Division

Enclosures



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

September 7, 1989

Chief Charles Owens  
City of Battle Creek Fire Department  
195 East Michigan Avenue  
Battle Creek, MI 49017

Chief Owens,

This letter is to inform the City of Battle Creek Fire Department that the Waldorf Corporation located at 177 Angell, Battle Creek, MI has on its property 6 (six) functioning transformers that contain Polychlorinated Biphenyls (PCB). This letter is for information only and we do intend to remove all PCB transformers by the year 1992.

If the City of Battle Creek requires any further information concerning these transformers feel free to contact me at the address that appears at the end of this letter.

Yours truly,

A handwritten signature in cursive script that reads "Randy B. Yates".

Randy B. Yates  
Supervisor Safety/Security  
Waldorf Corporation  
177 Angell  
Battle Creek, MI 49016  
(616) 963-5511 ext. 346

RBV/sf

*Don Opala*  
*file copy*

**DORSEY & WHITNEY**

A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATION

2200 FIRST BANK PLACE EAST  
MINNEAPOLIS, MINNESOTA 55402  
(612) 340-2600

TELEX 29-0605  
FAX (612) 340-2868

MARK R. KASTER  
(612) 340-7815

January 17, 1990

340 FIRST NATIONAL BANK BUILDING  
ROCHESTER, MINNESOTA 55908  
(507) 288-3156

315 FIRST NATIONAL BANK BUILDING  
WATZATA, MINNESOTA 55891  
(612) 475-0373

1200 FIRST INTERSTATE CENTER  
BILLINGS, MONTANA 59103  
(406) 252-0800

204 DAVIDSON BUILDING  
GREAT FALLS, MONTANA 59401  
(406) 727-3632

127 EAST FRONT STREET  
MISSOULA, MONTANA 59808  
(406) 721-8085

350 PARK AVENUE  
NEW YORK, NEW YORK 10022  
(612) 415-9800

1330 CONNECTICUT AVENUE, N. W.  
WASHINGTON, D. C. 20006  
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3 GRACECHURCH STREET  
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01-929-3334

36, RUE TRONCHET  
75009 PARIS, FRANCE  
01-42-66-59-49

FAR EAST FINANCE CENTER  
HONG KONG  
852-5-8612555

Mr. Donald Opala  
Waldorf Corporation  
177 Angell Street  
Battle Creek, Michigan 49016

CONFIDENTIAL

ATTORNEY-CLIENT COMMUNICATION

Re: EPA Complaint Regarding PCBs

Dear Don:

I have reviewed the PCB reports and documentation from the Battle Creek facility. There is certain data which is missing from the documents. These include monthly inventory records and PCB annual reports for 1985 and 1986. The federal PCB regulations require regular monitoring of PCB transformers as well as the preparation of an annual summary report which details the storage, use and disposal of PCBs at the Waldorf facility. The EPA has requested that Waldorf reconstruct the data to the extent it wasn't documented during the relevant periods. I will confer further with the EPA and let you know how this issue is resolved.

I have also reviewed your PCB inspection reports prepared for March-May 1988. These reports indicated a possible PCB leak or spill for the power house transformer. You confirmed, however, that the reference to leaks and spills was indicative of "moisture" and not the leaking or spilling of PCB fluid. It is my understanding that Transformer Consultants was called upon to repair the transformer during this period. I will so indicate this on a reconstructed record.

Thank you for your assistance in this matter.

Very truly yours,

*Mark R. Kaster*

Mark R. Kaster

MRK/aj

cc: Mr. Les Spurgeon ✓  
Mr. Jack Greenshields  
Mr. Gary Kaziakewicz

# DORSEY & WHITNEY

A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

2200 FIRST BANK PLACE EAST  
MINNEAPOLIS, MINNESOTA 55402  
(612) 340-2600  
TELEX 29-0605  
FAX (612) 340-2868

MARK R. KASTER  
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January 17, 1990

340 FIRST NATIONAL BANK BUILDING  
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127 EAST FRONT STREET  
MISSOULA, MONTANA 59802  
(406) 721-6025

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3 GRACECHURCH STREET  
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01-929-3334  
36, RUE TRONCHET  
75009 PARIS, FRANCE  
01-42-66-59-49  
FAR EAST FINANCE CENTER  
HONG KONG  
852-5-8612555

Mr. Terence Bonace  
PCB Central Section 5SPT-7  
United States Environmental Protection Agency  
230 South Dearborn Street  
Chicago, Illinois 60604

Re: Waldorf Corporation  
TSCA-V-C-08-90

Dear Mr. Bonace:

The purpose of this letter is to provide documentation from Waldorf Corporation regarding the PCB inspection at its Battle Creek, Michigan facility last July, and the subsequent TSCA complaint which was filed by the EPA on December 7, 1989. Waldorf has undertaken a preliminary investigation into the allegations contained in the complaint. The investigation has revealed that Waldorf has made a substantial and concerted effort to comply with federal PCB regulations. It appears that a number of fortuitous events and miscommunications led to the present EPA complaint. The following briefly outlines my understanding of the facts.

The Michigan DNR (MDNR) apparently called Waldorf for the purpose of scheduling a PCB inspection. Waldorf consented and the inspection was set for July 27, 1989. In the normal course, Waldorf's plant engineer, Don Opala, would have coordinated the inspection. Mr. Opala, however, was unavailable on the day of inspection and Waldorf's security/safety supervisor, Randy Yates, led the inspection. Mr. Yates was not directly responsible for PCBs at the facility, although he did communicate from time-to-time with local community safety officials and he was training to understand environmental regulations pertinent to the facility.

## DORSEY & WHITNEY

Mr. Terence Bonace  
January 17, 1990  
Page Two

It is my understanding that Mr. Yates did not appreciate the scope and nature of the PCB inspection, but rather was available to lead the inspector to the various transformers at the facility.<sup>1/</sup> Mr. Yates was apparently unable to provide the inspector with documentation regarding PCBs because all of these materials were collected and maintained by the electrical department. Waldorf, however, was left with the impression that the inspection was generally acceptable to the MDNR inspector and any corrections were immediately addressed by Waldorf.

I am not aware of any written request by the MDNR for follow-up inspection of PCB documents and reports. Waldorf's files, however, reveal a letter from Mr. Yates to the MDNR inspector dated September 7, 1989, which apparently included certain PCB documentation. The letter is attached hereto. As you can see from the address on the letter, Mr. Yates was confused as to the agency (EPA rather than MDNR) which had undertaken the inspection. I do not know whether the letter was ever received by the MDNR.

The miscommunications between Waldorf and officials from the MDNR created the unfortunate situation in which Waldorf appeared to be non-responsive to the PCB inspection. The facts are that Waldorf is a responsible company that has made a substantial and continuing effort to comply with the complex federal regulatory scheme. Indeed, Waldorf has other facilities in Chicago and St. Paul which have had similar PCB inspections and which have been found to be in full compliance. I am enclosing copies of the EPA inspection compliance letters which Waldorf received in 1987 and 1989.

In connection with the seven PCB transformers at the Battle Creek facility, Waldorf has undertaken substantial efforts to comply with federal requirements. For example, Waldorf's staff electricians have inspected the PCB transformers on a regular basis. In addition, Waldorf has contracted with a transformer service company to inspect and service the transformers on an annual basis. Moreover, Waldorf has committed substantial resources and capital cost for a phased plan to remove and replace the PCB transformers at its facility.

<sup>1/</sup> It should be noted that Waldorf is a newly formed corporation as of July 17, 1985. Mr. Yates' tenure with the company was limited. He has since left the employment of Waldorf for other opportunities.

## DORSEY & WHITNEY

Mr. Terence Bonace  
January 17, 1990  
Page Three

The above information is reflective of Waldorf's commitment to comply with federal PCB regulations. The failed attempts to communicate these efforts with the MDNR obviously resulted in the issuance of the TSCA complaint. While we can certainly discuss how the mechanics of the inspection process may have failed, I think the better approach is to find a common ground to address the issues cited in the complaint. In this regard, I am providing a set of documents and records which reflect Waldorf's compliance activities. I am also providing a set of photographs which depict Waldorf's transformer stations. The following materials are enclosed:

1. The letter from Randy Yates to Patricia Spitzley dated September 7, 1989;
2. Two letters from EPA Region V to Waldorf regarding no PCB violations at Waldorf's St. Paul and Chicago facilities dated March 4, 1987 and June 23, 1989, respectively;
3. Periodic visual PCB transformer inspection reports for the period July 1985 through December 1989;
4. Annual reports prepared by transformer consultants dated April 13, 1987 and March 15, 1988;
5. Annual report prepared by GE dated August 28, 1989;
6. Letters to the City of Battle Creek Fire Department disclosing the presence and location of PCB transformers dated February 26, 1988 and February 28, 1989. Waldorf has had verbal conversation with the local Fire Chief Owen prior to this time;
7. The documentation related to the disposal of one PCB transformer by GE dated May 19, 1988; and
8. Photographs of the PCB transformer locations at Waldorf.

DORSEY & WHITNEY

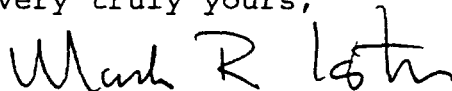
Mr. Terence Bonace  
January 17, 1990  
Page Four

I think the enclosed documents are fairly complete and represent Waldorf's efforts to comply with TSCA and the EPA regulations. In fact, it is my understanding that the MDNR inspector suggested that Waldorf replace the wire cage which surrounded transformer substation #2 with a masonry wall to provide further containment. Waldorf completed this work in November of last year. (See photographs). It undisputedly is EPA's policy to encourage this type of conscientious effort to properly handle PCBs.

The above information certainly does not present a fact situation which identifies a company trying to avoid compliance with the federal PCB requirements. Nor do the facts justify or compel the magnitude of penalties suggested in the TSCA complaint. Under the circumstances, the penalties sought by EPA are completely unmerited and do not comport with the nature, circumstance, limited extent and lack of gravity of the alleged violations. I would request that the agency consider Waldorf's excellent compliance history, the lack of prior violations, the limited potential for any harm or injury, the lack of culpability and Waldorf's stated efforts to remove PCB transformers from its facility in accordance with laws and regulations. These factors should mitigate the need for any penalty in this matter.

This letter is provided in an effort to settle and compromise the TSCA complaint as contemplated in § 22.18 of the Agency's Consolidated Rules of Practice and Rule 408 of the Federal Rules of Evidence. I hope the agency will see the merit of the arguments addressed herein and be prepared to reasonably discuss the situation during the informal settlement conference scheduled for 10:00 a.m. on January 19th, 1990. I look forward to working with you further.

Very truly yours,



Mark R. Kaster

Enclosures

cc: Jennifer Costanza, Esq.  
Mr. Les Spurgeon ✓  
Mr. Don Opala



**WALDORF**  
CORPORATION

177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

September 7, 1989

Patricia Spitzley  
United States Environmental Protection Agency  
Box 30028  
Lansing, MI 48909

Mrs. Spitzley:

This letter and enclosed documents are in response to your inspection of the Waldorf Corporations transformers on 27 July 1989. If you require any further information about this subject you can contact me at the address that appears at the end of this letter.

Yours truly,

Randy B. Yates  
Supervisor Safety/Security  
Waldorf Corporation  
177 Angell  
Battle Creek, MI 49016  
(616) 963-5511 ext. 346

RBV/sf

Enclosures

MAR 0 4 1987



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION 5**

**230 SOUTH DEARBORN ST.**

**CHICAGO, ILLINOIS 60604**

REPLY TO THE ATTENTION OF:

5S-P&TSB-7

**MAR 04 1987**

Mr. Dean Wetzel  
Senior Vice President  
Waldorf Corporation  
2250 Wabash  
St. Paul, Minnesota 55164

Re: PCB Compliance Inspection

Dear Mr. Wetzel:

On October 31, 1985, representatives of the United States Environmental Protection Agency (U.S. EPA) conducted a PCB compliance inspection of Waldorf Corporation, 2250 Wabash, St. Paul, Minnesota.

Based upon the data collected during that inspection, the U.S. EPA has determined that no violations of the Federal PCB regulations, 40 CFR Part 761, were evident at the time of inspection.

A copy of the inspection report is enclosed for your information. If you have any questions, please do not hesitate to contact Maria T. White, at (312) 886-6845.

Sincerely,

John Connell, Chief  
PCB Control Section

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 3

230 SOUTH DEARBORN ST.

CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:

JUN 23 1989

55PT-7

WELBORN CORP  
4300 S PULASKI  
CHICAGO IL 60632-  
02/21/89

Re: PCB Compliance Inspection

Dear Sir:

Representatives of the United States Environmental Protection Agency (U.S. EPA) conducted a PCB compliance inspection at the above facility on the above date.

Based upon the data collected during that inspection, the U.S. EPA has determined that no violations of the Federal PCB regulations, 40 C.F.R., Part 761, were evident at the time of the inspection.

If you have any questions, please do not hesitate to call this office at (312) 886-6906.

Sincerely,

*John Connell*  
John Connell, Chief  
PCB Control Section

Monitoring  
Loss  
July 85 - Dec. 89

## ENGINEERING CALCULATIONS

DATE \_\_\_\_\_

7-28-85

**PLANT**

**OF**

### DESCRIPTION OF JOB

# TRANSFORMER INSPECTION-MONTHLY

DEPARTMENT

41

**JOB ORC**

**SUBJECT**

ANGEL ST. MILL

**CALCULAT**

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y.
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	Elect
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	
	8113530	1000	434	NO	NO	
	8037218	300	209	NO	NO	
	8113527	1000	434	NO	NO	
BEATER ROOM DISCONNECTS	—	—	50-100	NO	NO	
SUBSTATION #3 (ATING BASEMENT)	8113529	750	380	NO	NO	
	8037219	200	115	NO	NO	

MISCELLANEOUS MATERIAL

[illegible]

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER
TRANSFORMER INSPECTION-MONTHLY					61	
SUBJECT						CALCULATION
ANGEL ST. MILL						
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	Deft 61
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	"	"
	8113530	1000	434	NO	"	"
	8037218	300	209	NO	"	"
	8113527	1000	434	NO	"	"
BEATER ROOM DISCONNECTS	—	—	50-100	NO	"	"
SUBSTATION #3 (TINE BASEMENT)	8113529	750	380	NO	"	"
	8037219	200	115	NO	"	"

MISCELLANEOUS MATERIAL

[illegible]

## ENGINEERING CALCULATIONS

DATE 11-6-85 PLANT \_\_\_\_\_ OF \_\_\_\_\_

DEPARTMENT

### JOB ORDER:

# TRANSFORMER INSPECTION-MONTHLY

61.

**SUBJECT**

ANGEL ST. MILL

### CALCULATION

54

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y.
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	61
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	"	"	61
	8113530	1000	434	"	"	61
	8037218	300	209	"	"	61
	8113527	1000	434	"	"	61
BEATER ROOM DISCONNECTS	—	—	50-100	"	"	61
SUBSTATION #3 (TINE BASEMENT)	8113529	750	380	"	"	61
	8037219	200	115	"	"	61

MISCELLANEOUS MATERIAL

[illegible]

## ENGINEERING CALCULATIONS

DATE 12-3-85 PLANT A OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER
TRANSFORMER INSPECTION - MONTHLY					61	
SUBJECT						CALCULATION
ANGEL ST. MILL						
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	R.M.H.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	R.M.H.
	8113530	1000	434	NO	NO	"
	8037218	300	209	NO	NO	"
	8113527	1000	434	NO	NO	"
BEATER ROOM DISCONNECTS			50-100	NO	NO	"
SUBSTATION #3 (TINE BASEMENT)	8113529	750	380	NO	NO	"
	8037219	200	115	NO	NO	"

MISCELLANEOUS MATERIAL

[illegible]

DATE 1-31-86 PLANT OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER NO.
SUBJECT						CALCULATIONS
TRANSFORMER INSPECTION - MONTHLY					61	
ANGEL ST. MILL						
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	BMH
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	"
	8113530	1000	434	NO	NO	"
	8037218	300	209	NO	NO	"
	8113527	1000	434	NO	NO	"
BEATER ROOM DISCONNECTS	—	—	50-100	NO	NO	"
SUBSTATION #3 (2ND FLOOR BASEMENT)	8113529	750	380	NO	NO	"
	8037219	200	115	NO	NO	"

MISCELLANEOUS MATERIAL

[illegible]

DATE 2-16-86 PLANT A194 OF 1

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER	
TRANSFORMER INSPECTION - MONTHLY				Elect		
SUBJECT					CALCULATION	
ANGEL ST. MILL				61		
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	R.M.H.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240			
	8113530	1000	434			
	8037218	300	209			
	8113527	1000	434			
BEATER ROOM DISCONNECTS	—	—	50-100			
SUBSTATION #3 (PUMP BASEMENT)	8113529	750	380			
	8037219	200	115			
MISCELLANEOUS MATERIAL						
LOCATION	DESCR.	ADDITIONS (GAL)	CONTENTS (GAL)	LEAKS	SPILLS	INSP. BY
SUBSTATION #2	USED OIL		20-30	NO	NO	R.M.H.



DATE 4-15-86 PLANT *Amal* OF 1

**DESCRIPTION OF JOB**

DEPARTMENT

**JOB ORDER**

## TRANSFORMER INSPECTION-MONTHLY

61

**SUBJECT**

ANGEL ST. MILL

### CALCULATION

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y.	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	2/11/12	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	11	11	11	
	8113530	1000	434	11	11	11	
	8037218	300	209	11	11	11	
	8113527	1000	434	11	11	11	
BEATER ROOM DISCONNECTS	—	—	50-100	11	11	11	
SUBSTATION #3 (PUMPING BASEMENT)	8113529	750	380	11	11	11	
	8037219	200	115	11	11	11	

MISCELLANEOUS MATERIAL

[illegible]



DATE 10-6-86 PLANT OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDR
TRANSFORMER INSPECTION-MONTHLY					61	
SUBJECT						CALCULATIO
ANGEL ST. MILL					SW	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	61
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	61
	8113530	1000	434	NO	NO	61
	8037218	300	209	NO	NO	61
	8113527	1000	434	NO	NO	61
BEATER ROOM DISCONNECTS	—	—	50-100	NO	NO	61
SUBSTATION #3 (TINE BASEMENT)	8113529	750	380	NO	NO	61
	8037219	200	115	NO	NO	61

MISCELLANEOUS MATERIAL

[illegible]

## ENGINEERING CALCULATIONS.

DATE Nov-86

PLANT

OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER No.
TRANSFORMER INSPECTION-MONTHLY	61	
SUBJECT		CALCULATIONS
ANGEL ST. MILL		

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.V.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
BEATER ROOM DISCONNECTS	—	—	50-100	No	No	
SUBSTATION #3 (UNDER BASEMENT)	8113529	750	380	No	No	
	8037219	200	115	No	No	

MISCELLANEOUS MATERIAL

[illegible]

## ENGINEERING CALCULATIONS

DATE JANUARY - 87. PLANT

OF

[illegible]

DATE Feb - 87 . PLANT . OF

[illegible]

# ST REGION REGIS

## ENGINEERING CALCULATIONS.

DATE MARCH-87 PLANT . OF

[illegible]

DATE \_\_\_\_\_

April - 87

**PLANT**

OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER NO.
TRANSFORMER INSPECTION-MONTHLY	61	
SUBJECT		CALCULATIONS
ANGEL ST. MILL		

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y.
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	D.P.V.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
FEEDER ROOM DISCONNECTS	—	—	50-100	No	No	
SUBSTATION #3 (IN BASEMENT)	8113529	750	380	No	No	
	8037219	200	115	No	No	

MISCELLANEOUS MATERIAL

[illegible]

DATE \_\_\_\_\_

E June - '87

## PLANT

**OF**

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER INSPECTION-MONTHLY				61		
ANGEL ST. MILL						
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	DPV
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	"
	8113530	1000	434	No	No	"
	8037218	300	209	No	No	"
	8113527	1000	434	Yes	No	"
FEEDER ROOM DISCONNECTS	—	—	50-100	No	No	"
SUBSTATION #3 (BASEMENT)	8113529	750	380	No	No	"
	8037219	200	115	No	No	"

MISCELLANEOUS MATERIAL

[illegible]

**JOB ORD**

61

**CALCULATI**

ANGEL ST. MILL

MISCELLANEOUS MATERIAL

[illegible]

DATE Dec. 87

**PLANT**

OF

### DESCRIPTION OF JOB

# TRANSFORMER INSPECTION-MONTHLY

DEPARTMENT

61

**JOB ORD!**

**SUBJECT**

ANGEL ST. MILL

**CALCULATI**

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	..	..	
	8113530	1000	434	..	..	
	8037218	300	209	..	..	
	8113527	1000	434	..	..	
BEATER ROOM DISCONNECTS	—	—	50-100	..	..	
SUBSTATION #3 (TINE BASEMENT)	8113529	750	380	..	..	
	8037219	200	115	..	..	

MISCELLANEOUS MATERIAL

[illegible]

RECYCLED FIBER DIVISION **ST REGIS** PAPER COMPANY

ENGINEERING CALCULATIONS

DATE 2-88

PLANT

OF

## DESCRIPTION OF JOB

TRANSFORMER INSPECTION-MONTHLY

DEPARTMENT

Dept-61

JOB ORD

SUBJECT

ANGEL ST. MILL

CALCULAT

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUB STATION #1 (POWER HOUSE)	8113528	750	380	Yes	No	BR
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	BR
	8113530	1000	434	No	No	BR
	8037218	300	209	No	No	BR
	8113527	1000	434	Yes?	No	BR
BEATER ROOM DISCONNECTS	—	—	50-100	No	No	BR
SUBSTATION #3 (SORTING BASEMENT)	8113529	750	380	No	No	BR
	8037219	200	115	No	No	BR

## MISCELLANEOUS MATERIAL

LOCATION	DESCR.	ADDITIONS (GAL)	CONTENTS (GAL)	LEAKS	SPILLS	INSP. BY
SUBSTATION #2	USED OIL		20-30	No	No	BR
MCC in CONVEYOR ROOM	136880	1500	DRY TYPE			

OF

MISCELLANEOUS MATERIAL

LOCATION	DESCR.	ADDITIONS (GAL)	CONTENTS (GAL)	LEAKS	SPIILLS	INSP. BY
SUBSTATION #2	USED OIL		20-30			
			Transformer cancelled to be contacted to inspect sub #1 and #2			



Acts 4:12

**DIVISION OF  
SD Myers**

**TRANSFORMER  
CONSULTANTS**

*Repair*

Phone: (216) 633-  
Toll Free: (800) 32

May 23, 1988

Mr. Steve Weers  
Waldorf Corp.  
177 Angell St.  
Battle Creek, MI. 49016

REF: 06194

Gentlemen:

Enclosed are the results of the transformer oils recently tested by our personnel.

Please refer to the section of the test data master sheet for the specific type of tests performed on your oil.

Normal servicing of units that contain PCB's in excess of 50 PPM is restricted by Federal Law. We can, however, lower the PCB concentration to acceptable limits. If you wish to discuss the options available please feel free to contact us.

Should you require further work on some of your transformers, a formal quotation will be forwarded per your request.

If you have any questions on this or any related matter, do not hesitate to contact our Tallmadge, Ohio office (216/633-2666).

Very truly yours,

CRAIG SCHLEY  
REGIONAL SALES

CS/jm



Acts 4:12

**DIVISION OF  
EDMeters**

**TRANSFORMER  
CONSULTANTS**

P.O. BOX 4724, AKRON, OH 44310

Phone: (216) 633-26  
Toll Free: (800) 321-

TEST SURVEY RECAP

CUST# 00100001

WALDORF CORPORATION

BATTLE CREEK MI

4/17/69

\* SUMMARY OF RESULTS \*

NOTE: EPA & OSHA-761 918-63 (hat)	TOTAL GALLONS OF LIQUID	769
any transformer not tested for PCB content (----)	TOTAL UNITS NON-PCB	5
also be considered contaminated (50-500ppm)	TOTAL W/O SCHT PCB TEST	0
	TOTAL UNITS CONTAMINATED	0
	TOTAL UNITS PCB	3
	TOTAL REQUIRING PCB TEST	0
	TOTAL REQUIRING SERVICE	1
	TOTAL KVA	1050
	ESTIMATED VALUE OF UNITS	28,100.00

The national average cost of annual transformer maintenance is  
6 pct of transformer investment. (EPRI JOURNAL, March, 1968). Based  
on the above estimated value of units, average annual maintenance  
for these units would be \$1,656.00

A number of your transformers require service. If you did not receive a quotation with  
these test reports, please call our AKRON office for a comprehensive study and proposal  
to solve the various problems.

H57341



Acts 4:12

**DIVISION OF  
EDMUNDSON**

**TRANSFORMER  
CONSULTANTS**

P.O. BOX 4724, AKRON, OH 44310

Phone: (216) 63  
Toll Free: (800)

TEST SURVEY RECAP

CUST# 88127000

WALDORF CORPORATION

BATTLE CREEK MI

4/19/88

TCP	SUBSTATION NAME	SIZE KVA	GALLONS LIQUID TYPE	PCB CLASS	PCB DATE	LET GC KF TCP PF	SERVICE PRODUCT
5	CONVEYOR ANDRELL FLT	800	209 ASKAREL	PCB		AC AC	ACCEPTABLE DATA-RE
7	POWER HOUSE	750	680 ASKAREL	PCB		AC AC	REPAIR/PAINT: SEE
12			50 OIL	NON-PCB	8/30/88		ACCEPTABLE DATA-RE
13			50 OIL	NON-PCB	8/30/88		ACCEPTABLE DATA-RE
14			50 OIL	NON-PCB	8/30/88		ACCEPTABLE DATA-RE
15			50 OIL	NON-PCB	8/30/88		ACCEPTABLE DATA-RE

Conveyor / Powers Subs inspected and  
repaired by T.C.

DATE 8-1-88 . PLANT OF

DESCRIPTION OF JOB					DEPARTMENT	JOB ORDER NO.	
SUBJECT						CALCULATIONS	
TRANSFORMER INSPECTION - MONTHLY					61		
ANGEL ST. MILL							
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY	
SUB STATION #1 (POWER HOUSE)	8113526	750	380	No	No	W.A.V.	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	W.A.V.	
	8113530	1000	434	No	No	W.A.V.	
	8037218	300	209	No	No	W.A.V.	
	8113527	1000	434	No	No	W.A.V.	
BEATER ROOM DISCONNECTS	—	—	50-100	No	No	W.A.V.	
SUBSTATION #3 (2ND BASEMENT)	8113529	750	380	No	No	W.A.V.	
	8037219	200	115	No	No	W.A.V.	

MISCELLANEOUS MATERIAL

[illegible]



## ENGINEERING CALCULATIONS.

DATE 10-4-88 PLANT

OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER NO.
TRANSFORMER INSPECTION-MONTHLY	61	
SUBJECT		CALCULATIONS
ANGEL ST. MILL		

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED B.Y.	
SUB STATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.U.	
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	}	
	8113530	1000	434	No	No		
	8037218	300	209	No	No		
	8113527	1000	434	No	No		
SEATER ROOM DISCONNECTS	—	—	50-100	No	No	}	
SUBSTATION #3 (2 <sup>ND</sup> FLOOR BASEMENT)	8113529	750	380	No	No		
	8037219	200	115	No	No		

MISCELLANEOUS MATERIAL

[illegible]

## ENGINEERING CALCULATIONS.

DATE 1/27 13-88 . PLANT . OF

### DESCRIPTION OF JOB

DEPARTMENT

## JOB ORDER

# TRANSFORMER INSPECTION-MONTHLY

61

**SUBJECT**

### CALCULATION

ANGEL ST. MILL

FEATER ROOM  
DISCONNECTS

MISCELLANEOUS MATERIAL

[illegible]

## ENGINEERING CALCULATIONS

SHEET NO.

DATE *Dec 12, 1988*

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	<i>No</i>	<i>No</i>	<i>W.A.U.</i>
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	<i>No</i>	<i>No</i>	
	8113530	1000	434	<i>No</i>	<i>No</i>	
	8037218	300	209	<i>No</i>	<i>No</i>	
	8113527	1000	434	<i>No</i>	<i>No</i>	
BEATER ROOM DISCONNECTS	----	----	50-100	<i>No</i>	<i>No</i>	
SUBSTATION #3 COATING BSMT.	8113529	750	380	<i>No</i>	<i>No</i>	
	8037219	200	115	<i>No</i>	<i>No</i>	

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	<i>No</i>	<i>No</i>	<i>W.A.U.</i>

SHEET NO. \_\_\_\_\_

DATE JANUARY 89

**PLANT**

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 POWER HOUSE)	8113528	750	380	No	No	W.A.V.
SUBSTATION #2 CONVEYOR ROOM)	7026594	1000	240	No	No	
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
EATER ROOM DISCONNECTS	----	----	50-100	No	No	
SUBSTATION #3 DATING BSMT.	8113529	750	380	No	No	
	8037219	200	115	No	No	
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	W.A.V.

## ENGINEERING CALCULATIONS

SHEET NO.

DATE *Feb. 89*

PLANT

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT				<i>61</i>	CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	<i>No</i>	<i>No</i>	<i>W.A.U.</i>
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	<i>No</i>	<i>No</i>	<i>W.A.U.</i>
	8113530	1000	434	<i>No</i>	<i>No</i>	
	8037218	300	209	<i>No</i>	<i>No</i>	
	8113527	1000	434	<i>No</i>	<i>No</i>	
EATER ROOM DISCONNECTS	—	—	50-100	<i>No</i>	<i>No</i>	
SUBSTATION #3 (OILING BSMT.)	8113529	750	380	<i>No</i>	<i>No</i>	
	8037219	200	115	<i>No</i>	<i>No</i>	

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	<i>No</i>	<i>No</i>	<i>W.A.U.</i>

## ENGINEERING CALCULATIONS

SHEET NO.

DATE

March, 1989

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

61

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	D.V.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	"
	8113530	1000	434	No	No	"
	8037218	300	209	No	No	"
	8113527	1000	434	No	No	"
EATER ROOM DISCONNECTS	—	—	50-100	No	No	"
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	"
	8037219	200	115	No	No	"

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	D.V.

## ENGINEERING CALCULATIONS

SHEET NO.

DATE April 89.

PLANT

OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER NO.
	61	
SUBJECT		CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	NO	NO	MJ
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	NO	MJ
	8113530	1000	434	NO	NO	MJ
	8037218	300	209	NO	NO	MJ
	8113527	1000	434	NO	NO	MJ
EATER ROOM DISCONNECTS	—	—	50-100	NO	NO	MJ
SUBSTATION #3 (OILING BSMT.)	8113529	750	380	NO	NO	MJ
	8037219	200	115	NO	NO	MJ

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	NO	NO	MIKE JA

SHEET NO.

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.U.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	}
	8113530	1000	434	No	No	
	8037218	300	209	No	No	
	8113527	1000	434	No	No	
EATER ROOM DISCONNECTS	—	—	50-100	No	No	
SUBSTATION #3 (OILING BSMT.)	8113529	750	380	No	No	
	8037219	200	115	No	No	
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	W.A.U.

SHEET NO.

DATE June 87

PLANT

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	2 IN PAN	NO	WAW.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	NO	✓	
	8113530	1000	434	NO	✓	
	8037218	300	209	NO	✓	
	8113527	1000	434	NO	✓	
EATER ROOM DISCONNECTS	----	----	50-100	NO	✓	
SUBSTATION #3 (OILING BSMT.)	8113529	750	380	NO	NO	
	8037219	200	115	NO	NO	
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	NO	NO	

## ENGINEERING CALCULATIONS

SHEET NO.

DATE *July 89*

PLANT

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO	
SUBJECT					CALCULATION	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	? <i>FEW DROPS - PAN</i>	<i>No</i>	<i>W.A.U.</i>
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	<i>No</i>	<i>"</i>	
	8113530	1000	434	<i>No</i>	<i>"</i>	
	8037218	300	209	<i>No</i>	<i>"</i>	
	8113527	1000	434	<i>No</i>	<i>"</i>	
EATER ROOM DISCONNECTS	-----	-----	50-100	-----		
SUBSTATION #3 (BOILING BSMT.)	8113529	750	380	<i>No</i>	<i>No</i>	<i>W.A.U.</i>
	8037219	200	115	<i>No</i>	<i>No</i>	<i>W.A.U.</i>
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECT BY
SUBSTATION #2	USED OIL		20-30	<i>No</i>	<i>No</i>	

## ENGINEERING CALCULATIONS

SHEET NO.

DATE *Aug 89*

PLANT

OF

DESCRIPTION OF JOB				DEPARTMENT	JOB ORDER NO.	
SUBJECT					CALCULATIONS	
TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	W.A.W.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	lr
	8113530	1000	434	No	No	1
	8037218	300	209	No	No	y
	8113527	1000	434	No	No	
SEATER ROOM DISCONNECTS	---	---	50-100	No	No	
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	
	8037219	200	115	No	No	
MISCELLANEOUS MATERIAL						
LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	

## ENGINEERING CALCULATIONS

SHEET NO.

DATE

9/1/89

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPIILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	D.P.V.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	"
	8113530	1000	434	No	No	"
	8037218	300	209	No	No	"
	8113527	1000	434	No	No	"
SEATER ROOM DISCONNECTS	—	—	50-100	No	No	"
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	"
	8037219	200	115	No	No	"

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPIILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	D.P.V.

## ENGINEERING CALCULATIONS

SHEET NO.

DATE

10/6/89

PLANT

OF

DESCRIPTION OF JOB

DEPARTMENT

JOB ORDER NO.

SUBJECT

CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	K.E.
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	"
	8113530	1000	434	No	No	"
	8037218	300	209	No	No	"
	8113527	1000	434	No	No	"
SEATER ROOM DISCONNECTS	----	----	50-100	No	No	"
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	"
	8037219	200	115	No	No	"

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPILLS	INSPECTED BY
SUBSTATION #2	USED OIL		20-30	No	No	K.E.



## ENGINEERING CALCULATIONS

SHEET NO.

DATE DEC-2-89

PLANT

OF

DESCRIPTION OF JOB	DEPARTMENT	JOB ORDER NO.
SUBJECT		CALCULATIONS

TRANSFORMER LOCATION	SERIAL NUMBER	KVA RATING	CONTENTS (GALLONS)	LEAKS (YES-NO)	SPIILL (YES-NO)	INSPECTED BY
SUBSTATION #1 (POWER HOUSE)	8113528	750	380	No	No	DPV
SUBSTATION #2 (CONVEYOR ROOM)	7026594	1000	240	No	No	DPV
	8113530	1000	434	No	No	DPV
	8037218	300	209	No	No	DPV
	8113527	1000	434	No	No	"
HEATER ROOM DISCONNECTS	—	—	50-100	No	No	"
SUBSTATION #3 COATING BSMT.	8113529	750	380	No	No	"
	8037219	200	115	No	No	"

## MISCELLANEOUS MATERIAL

LOCATION	DESCRIPT. (GAL.)	ADDITIONS (GAL.)	CONTENTS	LEAKS	SPIILLS	INSPECTE BY
SUBSTATION #2	USED OIL		20-30	No	No	DPV

PCB Annual Report

No.	Location	Size kVA	Gallons	Type
1.	Conveyor Angled	RT	240	Attained
2.	Conveyor Angled	P.T	434	"
3.	Conveyor Angled	P.T	209	"
4.	Conveyor Angled	P.T	434	"
5.	Power House	750	386	"
6.	Cooling Room	200	115	"
7.	Cooling Room	750	386	"

Total kg of PLS transferred:

$$2192 \text{ gal} = 8298 \text{ lbs} = 3763 \text{ kg}$$

$$\text{Assumes } 1 \text{ g} = 3.78 \text{ lbs}$$

$$1 \text{ lb} = 0.45 \text{ kg}$$

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 DR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#:SAMPLE #1 SUB #3

P.O. NUMBER :097-52516-01  
JOB NUMBER :65847

ATTN:MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
TEST DATE.....  
TEST ASTM # 08/28/89 SUGGESTED LIMIT  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	12 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGH SEDIMENT
SPECIFIC GRAVITY	D-1810	1.542	1.40 TO 1.62
WATER CONTENT	D-1533	38 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.611	-----
*VISCOSITY	D-445	55	50-60 SUS
*RESISTIVITY	D-1169	.8X10 <sup>9</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS:THIS SAMPLE FALLS WAY BELOW THE RECOMMEND LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
POB OPERATIONS

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#:SAMPLE #2 SUB #2

P.O. NUMBER :097-52515-01  
JOB NUMBER :65847

ATTN:MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....,TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	11 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/GI MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.546	1.40 TO 1.62
WATER CONTENT	D-1533	34 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	53	50-60 SUS
*RESISTIVITY	D-1169	.7X10 <sup>4</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS:THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY: *Arkie Salkil*

APPROVED BY: *John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 84385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #3 WET END  
LIGHTING SUB

P.O. NUMBER : 097-52516-01  
JOB NUMBER : 165847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMIT  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	13 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/ MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.544	1.40 TO 1.62
WATER CONTENT	D-1533	31 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-443	53	50-60 SUS
*RESISTIVITY	D-1169	.8X78	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

THE CHICAGO 'LIL'  
LIQUID INSULATION LABORATORY

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #4 SUB #1

P.O. NUMBER : 097-52516-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMIT  
\*\*\*\*\*

DIELECTRIC D-877			
STRENGTH KV	D-877	9 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/ MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.545	1.40 TO 1.62
WATER CONTENT	D-1533	41 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	52	50-60 SUS
*RESISTIVITY	D-1169	.6X10 <sup>4</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

APPROVED BY:

*John Engstrom*

ARKIE SALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#1 SAMPLE #5  
POWERHOUSE SUB

P.D. NUMBER 1097-52516-01  
JOB NUMBER 165847

ATTN:MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
TEST DATE.....  
TEST ASTM # 08/28/89 SUGGESTED LIMIT  
\*\*\*\*\*  
DIELECTRIC D-877  
STRENGTH KV D-877 11 KV 30 KV MIN.  
COLOR, ASTM D-2129 10 500 MAX.  
ACIDITY, MG KOH/G D-974 0.003 0.15 MG. KOH/G  
MAX.  
VISUAL CONDITION D-1702 CLEAR NO SEDIMENT CLEAR, SLIGHT  
SEDIMENT  
SPECIFIC GRAVITY D-1810 1.544 1.40 TO 1.62  
WATER CONTENT D-1533 38 % 30% MAX.  
REFRACTIVE INDEX D-1807 1.613 -----  
\*VISCOSITY D-445 53 50-60 SUS  
\*RESISTIVITY D-1169 .7X10<sup>9</sup> 1X10<sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY:

*Arkie Salkil*

ARKIE SALKIL  
LAB SPECIALIST

APPROVED BY:

*John Engstrom*

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6045 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #6 DRY END  
LIGHTING SUB

P.O. NUMBER :097-52516-01  
JOB NUMBER :65847

ATTN:MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMITE  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	10 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/G MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.544	1.40 TO 1.62
WATER CONTENT	D-1533	35 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.612	-----
*VISCOSITY	D-445	54	50-60 SUS
*RESISTIVITY	D-1169	.7X10 <sup>3</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITE

TESTED BY:

*Arkie Balkil*

APPROVED BY:

*John Engstrom*

ARKIE BALKIL  
LAB SPECIALIST

JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS

GENERAL ELECTRIC COMPANY  
APPARATUS & ENGINEERING SERVICES OPERATIONS  
6048 SOUTH NOTTINGHAM AVENUE  
CHICAGO, IL 60638  
(312) 229-2036 OR 8\*385-2036

GENERAL ELECTRIC COMPANY  
405 DEARBORN AVENUE  
TOLEDO, OH 43605

SAMPLE I.D.#: SAMPLE #7 DRY END  
POWER PANEL SUB

P.O. NUMBER : 097-52516-01  
JOB NUMBER : 65847

ATTN: MR. GEORGE LORING

ASKAREL DIELECTRIC FLUID  
ANALYSIS REPORT

ASKAREL

\*\*\*\*\*  
.....TEST DATE.....  
TEST                      ASTM #                      08/28/89                      SUGGESTED LIMITS  
\*\*\*\*\*

DIELECTRIC D-877 STRENGTH KV	D-877	11 KV	30 KV MIN.
COLOR, ASTM	D-2129	10	500 MAX.
ACIDITY, MG KOH/G	D-974	0.003	0.15 MG. KOH/G MAX.
VISUAL CONDITION	D-1702	CLEAR NO SEDIMENT	CLEAR, SLIGHT SEDIMENT
SPECIFIC GRAVITY	D-1810	1.545	1.40 TO 1.62
WATER CONTENT	D-1533	34 %	30% MAX.
REFRACTIVE INDEX	D-1807	1.613	-----
*VISCOSITY	D-445	52	50-60 SUS
*RESISTIVITY	D-1169	.7X10 <sup>6</sup>	1X10 <sup>9</sup>

\*TESTS PERFORMED ONLY UPON SPECIAL REQUEST

COMMENTS: THIS SAMPLE FALLS WAY BELOW THE RECOMMENDED LIMITS

TESTED BY: *Arkie Salkil*  
ARKIE SALKIL  
LAB SPECIALIST

APPROVED BY: *John Engstrom*  
JOHN ENGSTROM, MANAGER TRANSFORMER AND  
PCB OPERATIONS



Acts 4:12

**DIVISION OF  
EDMAYERS**

**TRANSFORMER  
CONSULTANTS**

P.O. Box 472  
Akron, Ohio  
Phone: (216)  
Toll Free: (800)

March 15, 1988

Mr. Steve Weers  
Waldorf Corp.  
177 Angell St.  
Battle Creek, MI. 49016

REF: Verbal

Gentlemen:

Enclosed are the results of the transformer oils recently tested by our personnel.

Please refer to the section of the test data master sheet for the specific type of tests performed on your oil.

Normal servicing of units that contain PCB's in excess of 50. PPM is restricted by Federal Law. We can, however, lower the PCB concentration to acceptable limits. If you wish to discuss the options available please feel free to contact us.

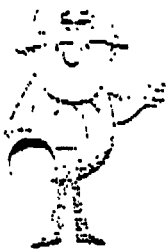
Should you require further work on some of your transformers, a formal quotation will be forwarded per your request.

If you have any questions on this or any related matter, do not hesitate to contact our Tallmadge, Ohio office (216/633-2666).

Very truly yours,

CRAIG SCHLEY  
REGIONAL SALES

CS/jm



RE: PCB CONTENT RESULTS

Gentlemen:

Enclosed with this letter are the results of your PCB tests.

Please note that the Federal Register (vol. 44, no. 106, May 31, 1979, p. 31517) defines these three classes of transformers: (1) PCB transformers (those units containing 500 PPM or greater PCB's); (2) PCB-contaminated transformers (those units containing 50-500 PPM PCB) and (3) non-PCB transformers (those units containing less than 50 PPM PCB).

We have provided as an additional service to you color-coded labels for your transformers. These colors are: (1) YELLOW...for PCB equipment; (2) ORANGE...for PCB-contaminated equipment, and (3) GREEN...for non-PCB equipment. Only those units in category (1), PCB equipment, are required by the EPA to have labels.

The Same Federal Register (pg. 31538) states: 'EPA will not consider it to be good judgement to assume that the sample has less than 50 PPM PCB because the experimental error of the procedure overlaps the cut-off point. Through experimental data and by cross-checking with other laboratories, we have determined a deviation of plus or minus 10%. For this reason, we have established our limits as below 45 PPM for non-PCBs, 45-450 PPM for PCB-contaminated oil and 450+ for PCB transformer oil.

A point to remember is that all samples other than transformer oil are classified as PCB's at 50 PPM or more.

A few of your test results may be reported using the following terms or abbreviations:

ND - None Detected  
Trace - Less than 1 PPM  
UP - Unidentified Peaks - the result from the chromatograms displayed major peaks NOT ASSOCIATED with PCB's normally found in electrical transformer fluid.

Very truly yours,

*John Dargie*  
John Dargie  
Regional Sales Manager

JD/su

Enclosures: Updated masters -- file and discard any prior copies  
Colored labels -- apply to respective transformer



Acts 4:12

**DIVISION OF  
EDMUNDSON**

**TRANSFORMER  
CONSULTANTS**

P.O. BOX 4724, AKRON, OH 44310

Phone: (216) 6:  
Toll Free: (800)

TEST SURVEY RECAP

CUST# 26125060

WALDORF CORPORATION

BATTLE CREEK MI

3/82/82

\* SUMMARY OF RESULTS \*

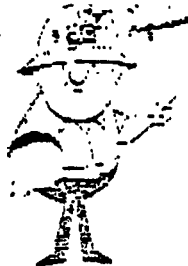
NOTE: EPA & CFR40-761 states that  
any transformer not tested for pcb content —>  
must be considered contaminated (50-500ppm)

TOTAL GALLONS OF LIQUID	2926
TOTAL UNITS NDM-PCB	0
TOTAL W/O EDM PCB TEST	0
TOTAL UNITS CONTAMINATED	0
TOTAL UNITS PCB	8
TOTAL REQUIRING PCB TEST	0
TOTAL REQUIRING SERVICE	7
TOTAL KVA	5200
ESTIMATED VALUE OF UNITS	114,400.00

The national average cost of annual transformer maintenance is  
6 pct of transformer investment. (EPRI JOURNAL, March, 1986). Based  
on the above estimated value of units, average annual maintenance  
for these units would be \$6,864.00

A number of your transformers require service. If you did not receive a quotation with  
these test reports, please call our AKRON office for a comprehensive study and proposal  
to solve the various problems.

1 transformer taken out of service and  
disposed of through G.E. See attached Report.  
(River Sub # S/N 8037220)



Acts 4:12

**DIVISION OF  
EDMVERS****TRANSFORMER  
CONSULTANTS**

P.O. BOX 4724, AKRON, OH 44310

Phone: (216) 633-2666  
Toll Free: (800) 321-9680

## TEST SURVEY RECAP

CUST# 36125000

WALONAF CORPORATION

BATTLE CREEK MI

3/85/88

TC#	SUBSTATION NAME	SIZE KVA	GALLONS LIQUID TYPE	PCB CLASS	PCB DATE	LST GC KF ICP PF	SERVICE PRODUCT
3	CONVEYOR ANGELL PLT	1000	240 ASKAREL PCB		AC	AC	REPAIR/PAINT: SEE VISUAL DATA
4	CONVEYOR ANGELL PLT	1000	434 ASKAREL PCB		AC	AC	REPAIR/PAINT: SEE VISUAL DATA
5	CONVEYOR ANGELL PLT	900	209 ASKAREL PCB		QU	AC	DEHYDRATION
6	CONVEYOR ANGELL PLT	1000	454 ASKAREL PCB		QU	AC	DEHYDRATION
7	POWER HOUSE	750	380 ASKAREL PCB		QU	AC	REPAIR/PAINT: SEE VISUAL DATA DEHYDRATION
8	COATING ROOM SUB	200	115 ASKAREL PCB		AC	AC	ACCEPTABLE DATA-RETEST 1 YEAR
9	COATING SUB	750	380 ASKAREL PCB		AC	AC	REPAIR/PAINT: SEE VISUAL DATA
10	RIVER SUB ANGELL PLT	200	154 ASKAREL PCB		AC	AC	REPAIR/PAINT: SEE VISUAL DATA

3763 kg

**DIVISION OF**  
**ED Myers**

**TRANSFORMER**  
**CONSULTANTS**

P.O. Box 4724  
Akron, Ohio 44310  
Phone: (216) 633-2666  
Toll Free: (800) 321-9580

April 13, 1987

Waldorf Corp.  
177 Angell St.  
Battle Creek MI 49016

ATTN: Steve Weers

REF: 03673

Gentlemen:

Enclosed are the results of the transformer oils recently tested by our personnel.

Please refer to the section of the test data master sheet for the specific type of tests performed on your oil.

Normal servicing of units that contain PCB's in excess of 50 PPM is restricted by Federal Law. We can, however, lower the PCB concentration to acceptable limits. If you wish to discuss the options available please feel free to contact us.

Should you require further work on some of your transformers, a formal quotation will be forwarded per your request.

If you have any questions on this or any related matter, do not hesitate to contact our Tallmadge, Ohio office (216/633-2666).

Very truly yours,

*Craig Schley*  
Craig Schley  
Regional Sales

CS/jm



P.O. BOX 4724, AKRON, OH 44310

TEST SURVEY RECAP

CUST# 36125000

WALDORF CORPORATION

BATTLE CREEK MI

4/10/67

\* SUMMARY OF RESULTS \*

NOTE: EPA # CFR40-761 states that  
any transformer not tested for pcb content —>  
must be considered contaminated (50-500ppm)

TOTAL GALLONS OF LIQUID	2324
TOTAL UNITS NON-PCB	0
TOTAL W/O 50MI PCB TEST	0
TOTAL UNITS CONTAMINATED	0
TOTAL UNITS PCB	0
TOTAL REQUIRING PCB TEST	0
TOTAL REQUIRING SERVICE	0
TOTAL KVA	5200
ESTIMATED VALUE OF UNITS	114,400.00

The national average cost of annual transformer maintenance is  
6 pct of transformer investment. (EPRI JOURNAL, March, 1966). Based  
on the above estimated value of units, average annual maintenance  
for these units would be \$6,864.00

A number of your transformers require service. If you did not receive a quotation with  
these test reports, please call our AKRON office for a comprehensive study and proposal  
to solve the various problems.

# DIVISION OF STAFFS CONSULTANTS TRANSFORMER

P.O. BOX 4724, AKRON, OH 44310

## TEST SURVEY REPORT

CUST# 36125000

WALDORF CORPORATION

BATTLE CREEK NE

4/20/87

TC#	SUBSTATION NAME	SIZE KVA	SHALLONS LIQUID	PCB CL355	PCB DATE	EST NO	NO OF TOP OF SERVICE	REPAIR-SEE VISUAL INSPECTION
3	CONVEYOR ANDELL PLT	1000	240 ASKABEL PCB	AC	AC	AC	AC	REPAIR-SEE VISUAL INSPECTION
4	CONVEYOR ANDELL PLT	1300	434 ASKABEL PCB	AC	AC	AC	AC	REPAIR-SEE VISUAL INSPECTION
5	CONVEYOR ANDELL PLT	510	209 ASKABEL PCB	AC	AC	AC	AC	ACCEPTABLE DATA-RETEST : 12
6	CONVEYOR ANDELL PLT	1000	434 ASKABEL PCB	AC	AC	AC	AC	RETEST ONE YEAR
7	POWER HOUSE	750	330 ASKABEL PCB	AC	AC	AC	AC	REPAIR-SEE VISUAL INSPECTION
8	COATING ROOM SUB	200	115 ASKABEL PCB	AC	AC	AC	AC	ACCEPTABLE DATA-RETEST : 12
9	COATING SUB	750	320 ASKABEL PCB	AC	AC	AC	AC	ACCEPTABLE DATA-RETEST : 12
10	RIVER SUB ANDELL PLT	200	154 ASKABEL PCB	AC	AC	AC	AC	ACCEPTABLE DATA-RETEST : 12

3993 L

<u>No.</u>	<u>Location</u>		<u>Size kg/m</u>	<u>Gallons</u>	<u>Type</u>
1.	Conveyor Angell	PLT	1000	246	Atkars
2.	Conveyor Angell	PLT	1060	434	"
3.	Conveyor Angell	PLT	300	289	"
4.	Conveyor Angell	PLT	1000	434	"
5.	Power House		750	280	"
6.	Coating Room		200	115	"
7.	Coating Room		750	380	"
8.	River Sub		200	134	"

Total kg of PCB transmitters:

3993 kg.

Wildan's tenure of ownership did not begin until July 1985.

Letters to Battle Creek  
Fire Dept.



177 Angell Street  
Battle Creek, Michigan 49016-3433  
516 963-5511

February 26, 1988

City of Battle Creek Fire Department  
195 East Michigan Avenue  
Battle Creek, MI 49017

Attn: Charles Owens, Department Director

Dear Mr. Owens:

Attached please find the completed Tier Two Inventory Form for 1987 and Confidential Location Information Sheet of chemical(s) for which we have a M.S.D.S. and a quantity in excess of 10,000 lbs. as required per Title III of S.A.R.A.. In preparing this information, Waldorf has relied upon the manufacturer's M.S.D.S.. As such, the determination of physical and health hazards is offered in good faith but without warranty or representation.

We have also forwarded the above information to the State Emergency Response Commission and the Local Emergency Planning Commission.

If you have any questions, please contact the undersigned.

Yours truly,

A handwritten signature in dark ink, appearing to read "RBY" followed by a stylized flourish.

Randy B. Yates  
Coordinator Safety, Security and Training

enc.

cc. G. Kaziukewicz

## Tier Two EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY

**Specific  
Information  
by Chemical**

### Facility Identification

Name Waldorf Corporation

Street Address 177 Angell Street

City Battlecreek State MI Zip 49016

**BIC Code** 2631

Don & Brad  
Altogether 07.256.8165

**FOR  
OFFICIAL  
USE  
ONLY**

100

Date Received \_\_\_\_\_

Owner/Operator Name

Name Waldorf Corporation

Phone 16161963-5511

Mail Address 177 Angell St., Battlecreek, MI 49016

### Emergency Contact

**Director Safety.**

Name Randy B. Yates

### Training

## Security and Training

616, 963-5511 ext. 254

4. 616,966-7006 Pager

Name Mark Shapton

**THE Engineer**

Phone: 1616 963-5511 ext. 340; H. Phone: 1616 966-7201 Pager:

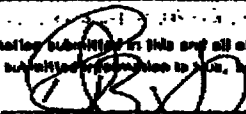
**Important: Read all instructions before completing form**

Reporting Period From January 1 to December 31, 19 87

Chemical Description	Physical and Health Hazards (check all that apply)	Inventory			Storage Codes and Locations (Non-Confidential)	
		Max. Daily Amount (code)	Avg. Daily Amount (code)	No. of Days On-site (days)	Storage Code	Storage Locations
CAS <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Trade Secret <input type="checkbox"/> Chem. Name <u>Polychlorinated Biphenyls</u>  Check all that apply: <input type="checkbox"/> Pure <input type="checkbox"/> Mix <input type="checkbox"/> Solid <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Gas	<input type="checkbox"/> Fire <input type="checkbox"/> Sudden Release of Pressure <input type="checkbox"/> Reactivity <input type="checkbox"/> Immediate (acute) <input checked="" type="checkbox"/> Delayed (chronic)	03	03	365	<input type="checkbox"/>	Confidential
CAS <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Trade Secret <input type="checkbox"/> Chem. Name <u>Benford Gum 270 (Starch)</u>  Check all that apply: <input type="checkbox"/> Pure <input type="checkbox"/> Mix <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas	<input type="checkbox"/> Fire <input type="checkbox"/> Sudden Release of Pressure <input type="checkbox"/> Reactivity <input type="checkbox"/> Immediate (acute) <input type="checkbox"/> Delayed (chronic)	03	03	365	<input type="checkbox"/>	Confidential
CAS <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Trade Secret <input type="checkbox"/> Chem. Name <u>PRO-COTE 200</u>  Check all that apply: <input type="checkbox"/> Pure <input type="checkbox"/> Mix <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas	<input type="checkbox"/> Fire <input type="checkbox"/> Sudden Release of Pressure <input type="checkbox"/> Reactivity <input type="checkbox"/> Immediate (acute) <input type="checkbox"/> Delayed (chronic)	03	03	365	<input type="checkbox"/>	Confidential

**Certification** (Read and sign after completing all sections)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based upon my knowledge of these individuals responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Randy B. Yates, Command Safety Sec. Training  2-26-89

Name and title of owner or authorized representative \_\_\_\_\_ Date signed \_\_\_\_\_

**Optional Attachments** (Check one)

☐ I have attached a site plan  
I have attached a list of site coordinate observations

**Optional Attachments (Check one)**

**Important: Read all instructions before completing form**

Federal Register / Vol. 52, No. 190 / Thursday, October 15, 1987 / Rules and Regulations 36373



177 Angell Street  
Battle Creek, Michigan 49016-3433  
616 963-5511

23 February 1989

City of Battle Creek Fire Department  
195 East Michigan Avenue  
Battle Creek, MI 49017

Attn: Charles Owens, Department Director

Mr. Owens,

Attached please find the completed Tier Two Inventory Form 1988 and Confidential Location Information Sheet of Chemical(s) for which we have a M.S.D.S. and a quantity in excess of 10,000 lbs. as required pre Title III of S.A.H.A.. In preparing this information, Waldorf has relied upon the manufacturers M.S.D.S.. As such, the determination of physical and health hazards is offered in good faith but without warranty or representation.

We have also forwarded the above information to the State Emergency Response Commission and the Local Emergency Planning Commission.

If you have any questions, please contact me at your convenience.

Yours truly,

A handwritten signature in cursive script that reads "Randy B. Yates".

Randy B. Yates  
Safety/Security Supervisor  
Waldorf Corporation, Battle Creek Plant

enc;

copies; G. Kaziukewicz  
L. Spurgeon  
D. Opala

<b>Tier Two</b> <b>EMERGENCY</b> <b>AND</b> <b>HAZARDOUS</b> <b>CHEMICAL</b> <b>INVENTORY</b>  Specific Information by Chemical	<b>Facility Identification</b> Name: <u>Waldorf Corporation</u> Street Address: <u>177 Angel Street</u> City: <u>Battle Creek</u> State: <u>MI</u> Zip: <u>49016</u>		<b>Owner/Operator Name</b> Name: <u>Waldorf Corporation</u> Phone: <u>616 963-5511</u> Mail Address: <u>177 Angel Street Battle Creek, MI 49016</u>	
	SIC Code: <u>26311</u> Date & Class: <u>57-2516-81165</u>		<b>Emergency Contact</b> Name: <u>Randy Yates</u> Title: <u>Safety Supervisor</u> Phone: <u>616 963-5511 Ext 340</u> 24 Hr. Phone: <u>616 963-5511</u>	
	FOR OFFICIAL USE ONLY Date Received: _____		Name: <u>Don O'Brien</u> Title: <u>Engineer</u> Phone: <u>616 963-5511 Ext 340</u> 24 Hr. Phone: <u>616 963-5511</u>	

Important: Read all instructions before completing form

Reporting Period: From January 1 to December 31, 19\_\_

Chemical Description	Physical and Health Hazards (check all that apply)	Inventory			Storage Codes and Locations (Non-Confidential)	
		Max. Daily Amount (code)	Avg. Daily Amount (code)	No. of Days On-site (days)	Storage Code	Storage Locations
CAS: <u>          </u> Trade Secret: <input type="checkbox"/> Chem. Name: <u>Polychlorinated Biphenyls</u> Check all that apply: <input type="checkbox"/> Pure <input type="checkbox"/> Mix <input type="checkbox"/> Solid <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Gas	<input type="checkbox"/> Fire <input type="checkbox"/> Sudden Release of Pressure <input type="checkbox"/> Reactivity <input type="checkbox"/> Immediate (acute) <input checked="" type="checkbox"/> Delayed (chronic) <u>per MSDS</u>	<u>03</u>	<u>03</u>	<u>365</u>	<u>          </u>	<u>CONFIDENTIAL</u>
CAS: <u>          </u> Trade Secret: <input type="checkbox"/> Chem. Name: <u>Penford Gum 270 (Starch)</u> Check all that apply: <input type="checkbox"/> Pure <input type="checkbox"/> Mix <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas	<input type="checkbox"/> Fire <input type="checkbox"/> Sudden Release of Pressure <input type="checkbox"/> Reactivity <input type="checkbox"/> Immediate (acute) <input type="checkbox"/> Delayed (chronic) <u>None per MSDS</u>	<u>03</u>	<u>03</u>	<u>365</u>	<u>          </u>	<u>CONFIDENTIAL</u>
CAS: <u>          </u> Trade Secret: <input type="checkbox"/> Chem. Name: <u>Pro-Cote 200</u> Check all that apply: <input type="checkbox"/> Pure <input type="checkbox"/> Mix <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Liquid <input type="checkbox"/> Gas	<input type="checkbox"/> Fire <input type="checkbox"/> Sudden Release of Pressure <input type="checkbox"/> Reactivity <input type="checkbox"/> Immediate (acute) <input type="checkbox"/> Delayed (chronic) <u>None per MSDS</u>	<u>03</u>	<u>03</u>	<u>365</u>	<u>          </u>	<u>CONFIDENTIAL</u>

Certification (Read and sign after completing all sections)

I, being aware of the penalties for knowingly furnishing false information, and being authorized to do so, certify that the information furnished in this and all attached documents, and the data and other information on which the information is based, are true and complete.

**Randy B. Yates Safety Supervisor**

21 Feb 1989

Optional Attachments (Check one)

☐ I have attached a site plan showing the location of all hazardous materials.





GE Disposal



Industry Services Engineering  
General Electric Company  
575 Front Street, NW, Grand Rapids, MI 49504  
616 454-4121/2319

May 19, 1988

Quotation No. 389E00165

Waldorf Corporation  
177 Angell Street  
Battle Creek, Michigan 49016

Attention: Mr. Steve Weers

Reference: PCB Transformer Disposal

Gentlemen:

In response to your request, the General Electric Company, Industrial Sales and Services Division, Grand Rapids Office, is pleased to submit our proposal to provide services at your Battle Creek facility as follows:

A. Remove and dispose of one (1) 200 KVA PCB transformer.

ISSD will provide technical supervision, craft labor, tools, and equipment required to complete the removal work.

A qualified field engineer will supervise technical and contractor personnel for the overall project.

A PCB certified supervisor will direct the actual PCB material handling and disposal.

WORKSCOPE:

Remove and dispose of the following transformer:

A. 200 KVA - S/N 8037220. 134 gallon = 230 kg (reconstructed)

Work on the transformer will include the following:

1. Disconnect HV and LV connections as necessary.
2. Remove the transformer.
3. Decommission and dispose of PCB liquid and transformer carcass.
4. Dispose of any other waste we generate while on-site pertaining to this portion of the work.
5. Provide disposal certificates and signed manifests to show proper disposal after completion of the job.

CUSTOMER RESPONSIBILITIES:

1. The customer shall provide free and safe access to the job site in order to perform this work.
2. All scheduling and switching shall be the responsibility of the customer. The transformer must be out of service to perform this work.
3. It shall be the customer's responsibility to provide an uninterrupted flow of work and/or access to the equipment. If delays are incurred, their associated costs will be billed as extras.
4. The customer must provide reasonable, mutually agreeable access to each equipment and work area. This includes removal and restoration of any and all obstructions in order to provide a clear path for rigging out the transformer between the present location and the closest convenient place to locate a truck.
5. Provide the required EPA I.D. number and PCB item out of service date.

PRICE, PAYMENT AND ESCALATION:

For the afore-mentioned scope of services we are pleased to quote you  
.....\$ 9,972.00 Lot Net.

Our terms of payment are net due upon receipt of invoice.

Title shall pass on a pro-rata basis as work is completed.

The prices quoted herein are firm for a period of thirty (30) days after which they shall be subject to adjustment.

The price quoted in this proposal is contingent upon all work being performed on a straight time basis, and all work being completed by the end of 1988.

BASIS OF PROPOSAL:

1. The terms and conditions of the attached GEISS Form 487 (CS), and the attached PCB clauses, GEISS Form 487 (PCB), shall apply unless specifically stated otherwise in this proposal.
2. These units are presently owned by Waldorf Corporation and title cannot be transferred to a "middle agent" or "distributor", etc. for resale to another ultimate user.
3. Title to the toxic waste will transfer on a per event basis at the beginning of on-site work on each particular piece of equipment .

This document contains proprietary information and is submitted upon the expressed condition that the information contained herein will not be used directly or indirectly in any way detrimental to the interest of the General Electric Company.

We thank you for allowing us to be of service, and hope to be favored with your order. I am sure you will find our PCB terms to be the best available in the industry. Should any further questions arise, please do not hesitate to contact me at this office.

Sincerely;



Warren J Thaler  
Area Engineer  
ISSD - Industrial.



## ENVIROSAFE SERVICES OF IDAHO, INC.

May 24, 1989

General Electric Company

Cleveland Apparatus Service  
4477 East 49th Street

Cleveland, OH 44125

ATTENTION: Mr. Paul Bender

SUBJECT: CERTIFICATE OF DISPOSAL

<u>MANIFEST#</u>	<u>DATE RECEIVED</u>	<u>DATE DISPOSED</u>	<u>MATERIALS</u>
00905	07-05-88	07-05-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00913	07-21-88	07-22-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00943	08-08-88	08-08-88 <i>posted</i>	PCB D & F Transformers/ Drum Solids
00946	08-08-88	08-10-88 <i>posted</i>	PCB D & F Transformers
00958	08-16-88	08-16-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums
00976	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers/ Empty Drums/ Drum Solids
00977	09-06-88	09-06-88 <i>posted</i>	PCB D & F Transformers

Specific material as identified by the above Manifest Document Number(s), has been received and disposed of at our landfill facility located in Grand View, Idaho in accordance with contract.

If you have any questions or need additional information feel free to contact me in the Boise office at (208) 384-1500.

Sincerely,

*Ida Larson*

Ida Larson  
Accounts Receivable



GE Industry  
Sales & Services

## Certificate of Disposal

General Electric Company certifies  
that all material received from

WALDORF PAPER

described on

Manifest Number 00901 Dated JUNE 30, 1988 was  
disposed of at the following Disposal Sites:

TRANSFORMER DISPOSED AT: ENVIROSAFE SERVICES OF IDAHO  
10 1/2 MILES, NW, GRANDVIEW, IDAHO 63624  
EPA ID NUMBER: ID0073114654  
MANIFEST DOCUMENT NUMBER: 00913

Authorized Signature  
PCB FACILITY SUPERVISOR

Title  
4477 EAST 49TH STREET

Street Address

CLEVELAND OHIO 44125

City State Zip



# MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE

ATT. ☐ DIS. ☐ REJ. ☐ PR ☐

1979, as amended and Act 136, P.A. 1968.

Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, P.A. 1968.

Please print or type.

Form Approved OMB No. 2050-0039 Expires 9-30-88

## UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. **MI 2700137580** Manifest Document No. **01** 2. Page **1** of **1** 3. Information in the shaded areas is not required by Federal law.

4. Generator's Name and Mailing Address **WALDORF PAPER  
177 ANGELL ST.  
BATTLECREEK, MI 49016** 5. State Manifest Document Number **MI 1079869**

6. Generator's Phone ( **616** ) **963-5511** 7. State Generator's ID **MI 2700137580** 8. State Generator's ID **MI 2700137580**

9. Transporter 1 Company Name **GENERAL ELECTRIC COMPANY** 10. US EPA ID Number **OH D004527008** 11. State Transporter's ID **OH 05211**

12. Transporter 2 Company Name **GENERAL ELECTRIC COMPANY** 13. US EPA ID Number **OH D004527008** 14. State Transporter's ID **OH 05211**

15. Designated Facility Name and Site Address **GENERAL ELECTRIC COMPANY  
4477 EAST 49TH STREET  
CLEVELAND, OHIO 44125** 16. US EPA ID Number **OH D004527008** 17. State Facility's ID **OH 05211**

18. US DOT Description (including Proper Shipping Name, Hazard Class, and HM. **HAZARDOUS SUBSTANCE, LIQUID, N.O.S., ORM-E  
NA9188, RQ, (POLYCHLORINATED BIPHENYLS)** 19. Containers **0 0 1 C M** 20. Total Quantity **0 5 0 0 0** 21. Unit **PP** 22. Waste No. **0 5 2 1 1** 23. N/H

24. Additional Descriptions for Materials Listed Above **TRANSFORMER WITH FLOODED COILS** 25. Handling Codes for Wastes Listed Above **a/ b/ c/ d/**

26. Special Handling Instructions and Additional Information **DIKE AND CONTAIN SPILLS AVOID SKIN CONTACT, GE REF# 60891**

27. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

28. Printed/Typed Name **Stephen M. Weers** 29. Signature **Stephen M. Weers** 30. Date **6/30/88**

31. Transporter 1 Acknowledgement of Receipt of Materials **FRED. MONTONARO** 32. Signature **Fred Montonaro** 33. Date **6/30/88**

34. Transporter 2 Acknowledgement of Receipt of Materials **FRED. MONTONARO** 35. Signature **Fred Montonaro** 36. Date **6/30/88**

37. Discrepancy Indication Space

38. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

39. Printed/Typed Name **Stephen M. Weers** 40. Signature **Stephen M. Weers** 41. Date **6/30/88**

42. Facility Name and Address **GENERAL ELECTRIC COMPANY  
4477 EAST 49TH STREET  
CLEVELAND, OHIO 44125** 43. US EPA ID Number **OH D004527008** 44. State Facility's ID **OH 05211**

45. Facility Phone ( **216** ) **883-1000** 46. State Facility's ID **OH 05211**

47. Facility Name and Address **GENERAL ELECTRIC COMPANY  
4477 EAST 49TH STREET  
CLEVELAND, OHIO 44125** 48. US EPA ID Number **OH D004527008** 49. State Facility's ID **OH 05211**

50. Facility Phone ( **216** ) **883-1000** 51. State Facility's ID **OH 05211**

52. Facility Name and Address **GENERAL ELECTRIC COMPANY  
4477 EAST 49TH STREET  
CLEVELAND, OHIO 44125** 53. US EPA ID Number **OH D004527008** 54. State Facility's ID **OH 05211**

55. Facility Phone ( **216** ) **883-1000** 56. State Facility's ID **OH 05211**

57. Facility Name and Address **GENERAL ELECTRIC COMPANY  
4477 EAST 49TH STREET  
CLEVELAND, OHIO 44125** 58. US EPA ID Number **OH D004527008** 59. State Facility's ID **OH 05211**

60. Facility Phone ( **216** ) **883-1000** 61. State Facility's ID **OH 05211**

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, OR MICHIGAN A/ 1-800-292-1700 OR OUT OF STATE AT 517-375-7689 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-6022 24 HOURS PER DAY.



# GE Industry Sales & Services

## Supplemental Conditions for PCB Services

For PCB Services, the conditions contained herein shall supplement the CONDITIONS OF SALE, GEISS Form 487(CS):

### 1. DEFINITIONS

a. "PCB Service" shall mean the service described in the attached quotation or contract to the extent that such services involve PCB Material. PCB Service may include removal, disposal, repair, testing, clean-up, replacement of insulating fluids and all other activities (such as transportation, storage, etc.) incident thereto.

b. "PCB Material" shall mean the equipment or other material containing or contaminated with polychlorinated biphenyl (PCB) identified in the attached quotation or contract as well as all the parts and the contents thereof and all material used in the performance of the PCB Service which comes into contact with PCB Material.

c. "Release" shall mean with respect to the PCB Material the intentional or unintentional spilling, migration or escape of the PCB Material or any part thereof either alone or in connection with any other substance, including, but not limited to, water, air and smoke.

### 2. PCB MATERIAL TERMS

a. GE represents that it has knowledge of the requirements associated with the use, collection, handling, storage, transportation and disposal of the PCB Material; that it has experience in such use, collection, handling, storage, transportation and disposal; and that it shall have instructed its personnel, subcontractors and agents in the proper procedures to be used in the performance of PCB Service.

b. GE will perform the PCB Service in compliance with any and all federal, state and local laws and regulations pertaining thereto, including but not limited to, the regulations contained in 40 CFR Part 761; and will have obtained all licenses and permits required by law to engage in the activities necessary to perform the PCB Service.

c. GE warrants that storage, transportation and disposal of the PCB Material will be done by means of facilities and vehicles which are fully licensed by appropriate federal, state and local authorities, as required.

d. The Customer warrants that it has full legal title to, or the power and right to transfer title to, the PCB Material (including, without limitation, all licenses or permits required by law or regulation to be obtained by the owner and/or generator of the material), and that the Customer has no knowledge that the PCB Material is not as otherwise described in the contract documents.

e. If the Customer provides containers for transportation and/or storage of the PCB Materials, such containers shall comply with all applicable law. GE's sole remedy for the Customer's default under this paragraph is, that upon discovery of one or more non-complying containers, GE may provide complying containers and charge the Customer for the containers, the labor needed to transfer the PCB Material into complying containers, and any additional disposal charges.

f. To the extent that any PCB Material is to be disposed of, GE will take title to such PCB Material when it is loaded on a transport vehicle provided by GE or when the PCB Material is delivered to a GE facility, whichever is earlier. If GE and Customer have agreed in writing that title will pass at an earlier time, such agreement will govern. GE takes title to the PCB Material only for the purpose of disposal and shall not

use or transfer title to the PCB Material for any other purpose. In the event that the PCB Material is later determined to be of a nature or character different from that described in the contract documents, title shall pass back to the Customer and, unless otherwise agreed, GE may return the PCB Material to the Customer at the Customer's expense and the Customer shall be liable for and shall indemnify GE against all losses, damages and claims caused by the PCB material including any damage to the environment, except to the extent that such losses, damages or claims are the result of the negligent or other illegal act or omission of GE or its subcontractors.

g. Unless the Customer has otherwise advised GE in writing before commencement of the PCB Service, the Customer represents that any of the PCB material which is to be disposed of has not been in storage for disposal or out of service prior to the start of work. The Customer shall indemnify GE against all loss, cost and liability, including fines, penalties, attorneys' fees and costs of defense and extra costs of disposal, on account of any failure of GE to cause the disposal of any PCB material prior to one year after the PCB Material first went into storage for disposal because of reliance on the representation described in the preceding sentence or on any false or mistaken representation by the Customer concerning the date when the PCB material first went into storage for disposal.

h. Unless otherwise agreed or required by law, GE will not test the PCB Material to determine the level of PCB concentration without the prior consent of the Customer. Unless there is a determination of PCB concentration made or accepted by GE:

- (1) GE may charge the disposal price for PCB Material of the highest concentration;
- (2) GE may use special procedures to prevent contamination of its facilities and equipment and make an appropriate extra charge for such service; and
- (3) GE shall not be liable to the Customer for any level of PCB concentration revealed by a subsequent test.

i. The following rules apply in the case of any replacement of insulating fluid for the purpose of reclassifying any equipment under 40CFR 761.30(a)(2)(v), (b)(2)(vi) or (h)(2)(v):

- (1) Unless otherwise agreed, the Customer shall be responsible for operating the equipment as required by regulation or otherwise during a 90-day in-service period.
- (2) GE will test to determine the level of PCB concentration prior to fluid replacement and will make a compliance retest after the 90-day in-service period.
- (3) GE guarantees that the PCB concentration shown by a compliance retest will not exceed the concentration level stated in the contract documents, or, if no level is stated, then, that the PCB concentration will be such that the equipment will be reclassified to the next lower class. The Customer's sole remedy for a breach of this guarantee is that GE will reperform the service to achieve the results guaranteed. GE shall not be responsible for any increase in PCB concentration shown by testing after a successful compliance retest.

j. Subject to the provisions of paragraph 2.k. below, in the event of the failure by GE, its employees, agents and subcontractors to comply with any applicable federal, state or municipal law, regulation or rule which directly or indirectly regulates or affects the use, collection, handling, storage, transportation or disposal of the PCB Material; or the release of all or any part of the PCB material prior to the completion of the



# GE Industry Sales & Services

## Conditions of Sale for Services

The sale of any service and incidental goods ordered by the Customer is expressly conditioned upon the terms and conditions contained or referred to herein. Any additional or different terms and conditions set forth in the Customer's purchase order or similar communication are objected to and will not be binding upon GE Industry Sales & Services (herein called GE) unless specifically assented to in writing by GE's authorized representative. Authorization by the Customer, whether written or oral, to furnish services and incidental goods will constitute acceptance of these terms and conditions.

### 1. SERVICE DEFINITIONS

a. **COMPLETE INSTALLATION/MAINTENANCE/CONSTRUCTION** is any combination of planning, management, labor, tools and incidental goods to move, install, assemble, modify, repair, modernize, start-up and/or maintain equipment.

b. **FIELD ENGINEERING** is engineering and technical guidance, advice and counsel based upon GE's current engineering, manufacturing, installation and operating practices, as related to work performed by others.

c. **JOB MANAGEMENT** is any combination of planning, scheduling, monitoring, selection of crews, as specified in the contract documents, but does not include responsibility for supervision of labor or for the quality or acts of craft labor.

d. **TRAINING** is an instructional course prepared and provided by personnel proficient in the subject matter.

e. **ENGINEERING STUDY/INSPECTION/TEST** is system design and analysis of equipment or systems by competent, experienced personnel using special techniques, instruments or devices with the objective of reporting opinions or recommendations relating to the current condition and future serviceability of the equipment or system.

f. **PCB SERVICE** is any combination of relocation, testing, containment, retrofit/refill or retrofit/replacement of PCB material.

### 2. WARRANTY

a. GE warrants to the Customer that goods and services sold will be free from defects in material and workmanship and will conform to any mutually agreed upon specifications. If any failure to meet this warranty appears within one year from the date of shipment of the goods or completion of the services, on the condition that GE be promptly notified in writing thereof, GE will correct any such failure by reperforming any defective portion of the services furnished and supplying conforming goods. If the contract covers complete installation, maintenance or construction, GE will correct the failure by reperforming any defective service, and either repairing or replacing (at its option) any defective goods furnished and any damage to the equipment upon which the service was performed resulting from defective service. If reperformance is not practicable, GE will furnish without charge services in an amount essentially equal to those which, in GE's sole judgement, would have been required for performance. If the contract covers job management, GE's sole obligation will be to replace the job manager for the balance of the job. If the contract covers training, GE's sole obligation will be to replace the assigned instructor and reperform the training.

b. The preceding paragraph a. sets forth the exclusive remedy for all claims based on failure of, or defect in, goods or services sold hereunder, whether the failure or defect arises before or during the warranty period, and whether a claim, however instituted, is based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise. The foregoing warranty is exclusive and is in lieu of all other warranties whether written, oral, implied or statutory. **AS TO ALL GOODS SOLD, NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PARTICULAR PURPOSE SHALL APPLY.**

### 3. PATENTS

a. GE warrants that the goods sold hereunder, and any part thereof, shall be delivered free of any rightful claim of any third party for infringement of any United States patent. If notified promptly in writing and given authority, information and assistance, GE shall defend, or may settle, at its expense, any suit or proceeding against the Customer based on a claimed infringement which would result in a breach of this warranty, and GE shall pay all damages and costs awarded therein against the Customer due to such breach. In case any goods are in such suit held to constitute such an infringement and the use for the purpose intended of said goods is enjoined, GE shall, at its expense and option, either procure for the Customer the right to continue using said goods, or replace same with noninfringing goods, or modify same so they become noninfringing, or remove the goods and refund the purchase price (less reasonable depreciation for any period of use) and any transportation costs separately paid by the Customer. The foregoing states the entire liability of GE for patent infringement.

b. The preceding paragraph a. shall not apply to any goods specified by the Customer and not of GE manufacture, or manufactured to the Customer's design, or to the use of any goods furnished hereunder in conjunction with any other goods in a combination not furnished by GE as a part of the transaction. As to any such goods, or use in such combination, GE assumes no liability whatsoever for patent infringement and the Customer will hold GE harmless against any infringement claim arising therefrom.

### 4. EXCUSABLE DELAYS

a. GE shall not be liable for delay due to: (1) causes beyond its reasonable control, or (2) acts of God, acts of the Customer, prerequisite work by others, acts of civil or military authority, government priorities, fires, strikes or other labor disturbances, floods, epidemics, war, riot, delays in transportation or car shortages, or (3) inability to obtain or delay in obtaining, due to causes beyond its reasonable control, suitable labor, materials, or facilities. In the event of any such delay, the time of performance shall be extended for a period equal to the time lost by reason of the delay.

b. In the event GE is delayed by acts of the Customer or by prerequisite work by other contractors or suppliers of the Customer, GE shall be entitled to an equitable price adjustment in addition to extension of the time of performance.

### 5. SALES AND SIMILAR TAXES

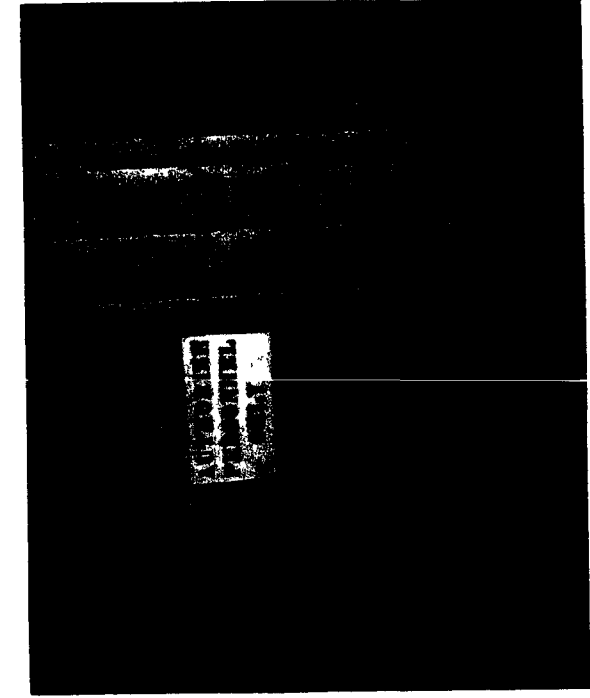
In addition to the price specified herein, the Customer shall pay, or reimburse GE for, the gross amount of any present or future sales, use, excise, value-added or other similar tax applicable to the price, sale or furnishing of any services or goods hereunder, or to their use by GE or the Customer, or the Customer shall provide GE with evidence of exemption acceptable to the taxing authorities.

### 6. PAYMENTS AND FINANCIAL CONDITION

a. Pro rata payments shall become due as shipments are made or as work is completed. If GE consents to delayed shipments of goods, payment shall become due on the date when GE is prepared to make shipment. All payments shall be made without set-off for claims arising out of other sales by GE.

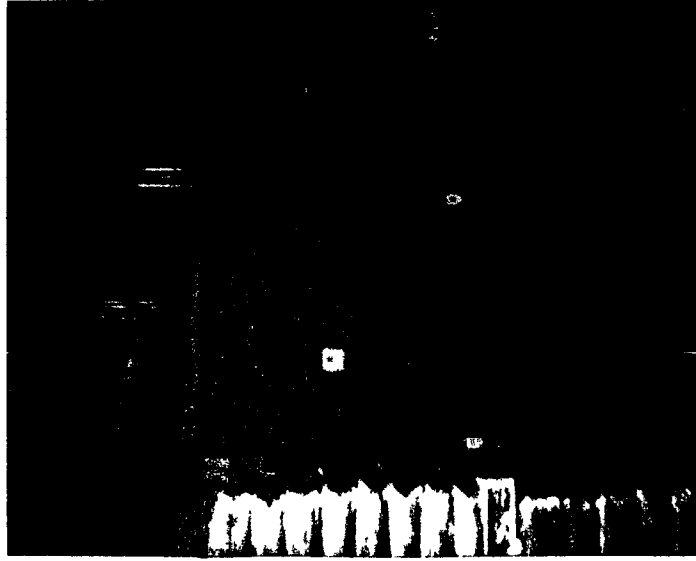
b. If the financial condition of the Customer at any time does not, in the judgment of GE, justify continued performance on the terms of payment previously agreed upon, GE may require full or partial payment in advance or shall be entitled to terminate the contract and receive

Photographs

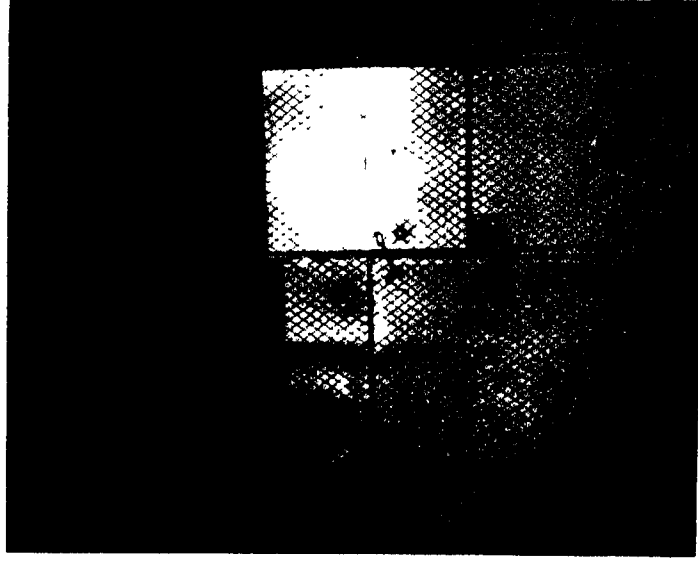


#2  
SUB

#1-84B

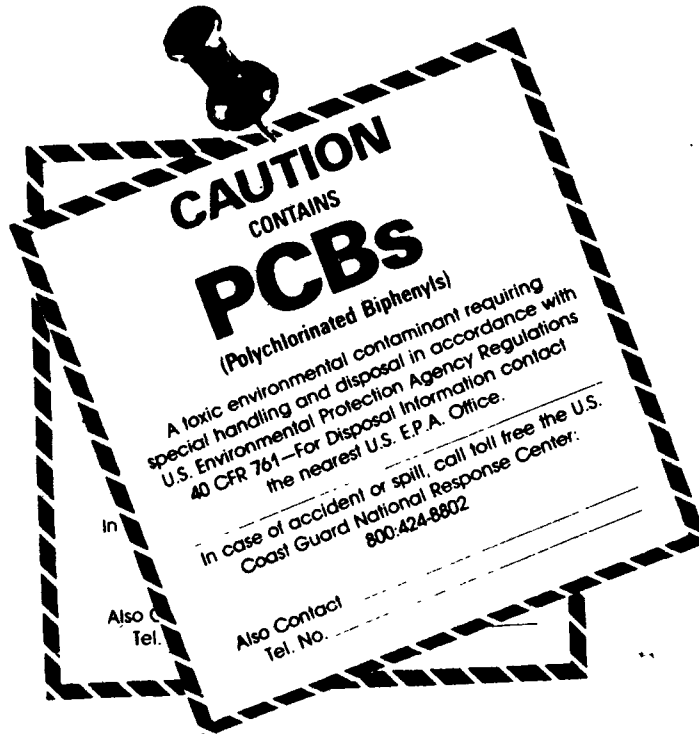


#2  
SUB



#3  
SUB

# The PCB Regulations:



Information To Help You Comply  
With These Federal Requirements

Michigan Department of Natural Resources  
Waste Management Division

DNR

## INTRODUCTION

The Michigan Department of Natural Resources (MDNR), Waste Management Division, operates a federal PCB compliance monitoring program under a Cooperative Agreement with the U.S. Environmental Protection Agency (U.S. EPA). In this program, MDNR field personnel, acting as federally trained and certified investigators, conduct inspections at a wide range of facility types throughout Michigan to determine compliance with the federal PCB regulations promulgated under the Toxic Substances Control Act (TSCA) and codified at 40 CFR 761.

The results of these inspections are forwarded to Region V U.S. EPA for evaluation and the development of appropriate federal enforcement actions, which may include the imposition of significant administrative penalties.

This document contains a variety of information intended to aid Michigan facilities in their efforts to assure compliance with these regulations.

For further information, please contact the PCB Program staff nearest you:

Northville District	313-344-4670
Plainwell District	616-685-9886
Lansing District	517-322-1300

## **-POLYCHLORINATED BIPHENYLS (PCBs)- INFORMATION SHEET**

Note: This information sheet is a summary of readily available data regarding the general nature and effects of this chemical. The reader is encouraged to consult other sources or an appropriate professional if a more detailed explanation for specific concerns is desired.

### **WHAT ARE POLYCHLORINATED BIPHENYLS?**

Polychlorinated biphenyls (PCBs) are a family of closely related chemicals which have been used extensively since the 1930s. The primary U.S. manufacturer of PCBs produced several formulations of PCBs, called Aroclors, between 1929 and 1977, totalling approximately 1.4 billion pounds. It has been estimated that approximately 180 million pounds of PCBs may still be available for release in various portions of the environment.

PCBs are formed by reacting chlorine with biphenyl, a petroleum product, with the different formulations varying in the percentage of chlorine (21%-68%). These mixtures range from yellowish oily liquids to amber, waxy-like fluids or solids, depending on the chlorine content. PCB mixtures are resistant to chemical and biological breakdown, and have high boiling points, low electrical conductivity, and very low flammability. These properties made PCBs useful as insulating and heat transfer fluids, and as components in lubricants, plastics, paints and other surface sealants, hydraulic fluids, inks, adhesives, pesticides, and carbonless duplication paper.

### **HOW DO PCBs GET INTO THE ENVIRONMENT?**

PCBs do not occur naturally. Their presence in the environment is a result of their many uses, as well as the disposal and accidental release of PCB mixtures and products which contain them. Once released, their unreactive nature has permitted PCBs to remain in the environment for long periods of time. PCBs accumulates in the body fat of living organisms, and can therefore become concentrated in the food chain (called biomagnification).

Trace amounts of PCBs have been reported in air, soil, sediment, surface water, ground water, and fish and wildlife samples from most areas of the world. Surveys of human blood, milk, and fat have shown that a majority of the U.S. population has been exposed to very small amounts of PCBs.

## WHAT ARE THE HEALTH EFFECTS ASSOCIATED WITH PCB EXPOSURE?

Short-term exposure -- The short-term effects of high levels of PCBs on humans have been determined primarily by studies of two accidental poisonings in the Far East and of several occupational exposures. The exposed groups suffered severe, persistent skin eruptions called chloracne, changes in blood chemistry, and persistently enlarged livers. Other complaints, especially from the accidental poisoning, included darkening and thickening of nails, excessive discharge from eyes, swelling of various areas (especially eyelids and limbs), numbness in extremities, stiffness of joints, and general weakness. Most of the symptoms disappeared fairly quickly after exposure was stopped, although chloracne has persisted in some victims for years. Some of the accidental poisoning symptoms may have been due to a few highly toxic components of the PCB mixture or to trace contaminants, called polychlorinated dioxins, furans, and quaterphenyls. These trace contaminants were present at higher levels in the PCB mixtures involved in the Far East poisoning than in the American products.

Long-term exposure -- Long-term occupational exposure to low levels of PCBs has been shown to result in the same types of symptoms as the short-term, higher level exposures. The effects of long-term exposure to even lower environmental concentrations of PCBs, such as eating PCB-containing fish, are currently being studied. Short- and long-term studies in animals have shown that PCBs cause reproductive problems and birth defects in some sensitive species, and often cause immune system alterations, liver enlargement and dysfunction, hormonal imbalances, and changes in blood chemistry. PCBs have been shown to cause liver tumors in rats and mice and to enhance the formation of tumors by other cancer-causing compounds. US EPA considers the evidence sufficient to rank PCBs as probable human carcinogens.

## HOW ARE PCBs REGULATED?

Due to the wide range of effects in different animal species, the adverse effects on humans, and the strong possibility of biomagnification of PCBs, these compounds have been regulated by several U.S. governmental agencies. Effective July 1, 1979, US EPA banned the manufacture and most "open-ended" uses of PCBs (that is, uses in which the PCBs were not contained or in which the item or material containing PCBs could be legally disposed in landfills). US EPA also developed regulations for phasing out "enclosed" uses of PCBs (such as in electrical transformers and capacitors) and for disposing spent PCBs and PCB-containing fluids. The U.S. Food and Drug Administration (FDA) has established tolerances (maximum amounts permissible) for PCBs in various human and animal foods. For example, the tolerance for fish and shellfish is 2.0 mg/kg (parts per million). Threshold Limit Values (TLV) adopted by the American Conference of Governmental Industrial Hygienists refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all healthy workers may be repeatedly exposed without adverse effect. The TLV for PCBs containing 42% chlorine is 1.0 mg/m<sup>3</sup> and that for PCBs containing 54% chlorine is 0.5 mg/m<sup>3</sup>. US EPA has developed ambient water quality criteria for PCBs at 0.079 ppt (parts per trillion) based on the risk to human health from ingesting contaminated water and fish.

## Chronological Events in the Control of PCBs

1929 First commercial production  
Early production as coolant/dielectric for transformers and capacitors.

1929-1975 Monsanto, only important U.S. producer—1.4 billion lbs.  
U.S. Production 1.25 billion lbs.  
Export 150 million lbs.  
In Service (currently) 750 million lbs.  
Landfills and Dumps 290 million lbs.  
Soil, water, air, river sediments 150 million lbs.  
Destroyed 55 million lbs. (4.4%)

1930 Toxicity tests indicated no effects.

1930-1960 Expansion of open-ended applications--incorporated into broad spectrum of products.

1937 Toxic effects noted in occupationally exposed workers and threshold limit values imposed at manufacturing sites.

1968 "Yusho" incident in Japan, over 1000 people poisoned by eating contaminated rice oil.

1970 Monsanto stopped production at its Anniston, Alabama plant.

1976 Congress enacted Toxic Substances Control Act (TSCA) on October 11, 1976.  
Section 6(e) addresses PCBs and its control

1977 Monsanto stops all production--closed plant in Sauget, Illinois.

1978 EPA began issuing Federal PCB rules (Title 40 Part 761).

# USES OF PCB CLASSIFIED TO GRADE OF AROCLOR

USES	AROCLOR	1221	1232	1016	1242	1248	1254	1260	1262	1268
CAPACITORS										
TRANSFORMERS										
VACUUM PUMPS										
GAS COMPRESSORS										
HYDRAULIC FLUID										
PLASTICIZER IN SYNTHETIC RESINS										
ADHESIVES										
PLASTICIZER IN RUBBERS										
HEAT TRANSFER										
WAX EXTENDERS										
DEDUSTING AGENTS										
PESTICIDE EXTENDERS INKS, CUTTING OILS ETC.										
CARBONLESS COPY PAPER										
%Cl.		21.5	31.5	41	42	48	54	60	61.5	68

SOURCE: "The Chemistry of PCBs", Hutzinger et. al., 1974

\*\*Applications are in black

Transformers come in a variety of shapes and sizes. Some, *usually* smaller ones, are a dry type and do not contain any liquids. In transformers containing dielectric fluid, the fluid also serves as a heat exchanger. Heat from the windings is transferred to the casing. If the heat transfer capacity of a transformer casing is not sufficient, cooling tubes or fins may be added. These operate like a car radiator. Most larger transformers are characterized by these tubes or fins. Transformers may be located:

- inside a building (usually along a wall);
- inside a building enclosed in a concrete vault or electrical room;
- on the roof;
- underground (usually in mines only);
- outside on a concrete pad; and,
- outside on a utility pole.

Some companies may utilize a variety of locations for a number of transformers (see Figure 1).

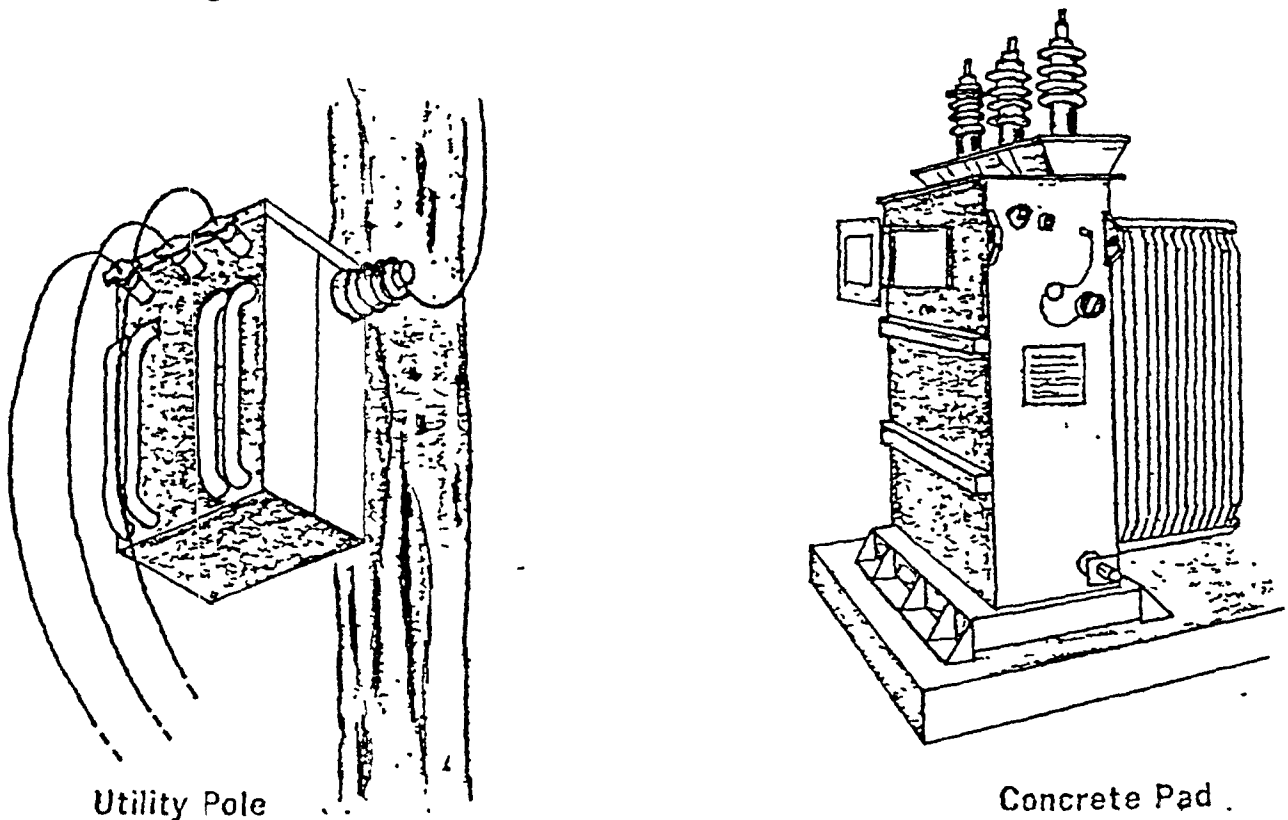


FIGURE 1      LOCATIONS OF TRANSFORMERS

Capacitors allow for the more efficient use of electrical power through power factor correction. They vary in size considerably, from the size of an ice cube to much larger than a refrigerator. Capacitors in light ballasts usually have two electrical terminals extending from one end of the hermetically-sealed metal casing. Larger capacitors may have three or more electrical terminals.

For power factor correction of induction furnaces, capacitors may be wired together in a "bank" for increased capacitance (see Figure 2).

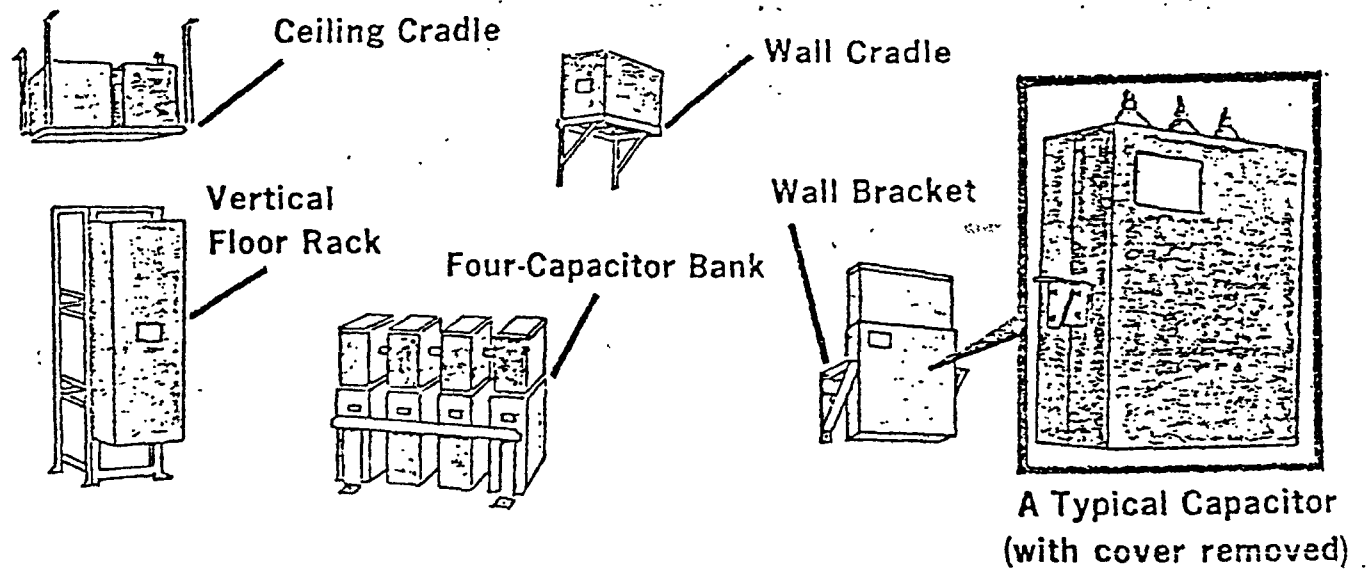


FIGURE 2 TYPICAL CAPACITOR LOCATIONS

Capacitors may be found in a variety of locations within a building:

- wired to the electrical terminals of A.C. motors (if 30 horsepower or larger), electric welders and induction furnaces;
- in the plant area, wired to bus bars feeding a row of motors or electric welders;
- connected to motor control centre panels; or
- connected to the main service cables inside the electrical room.

PCB TRANSFORMERS AND CAPACITORS  
LISTED BY TRADE NAME

The following are the trade names used by various manufacturers for the dielectric fluids in PCB transformers and capacitors. This information can be found on the transformer or capacitor manufacturer's nameplate.

<u>TRADE NAME</u>	<u>MANUFACTURER</u>
ALC	R. C. Uptegraff
Aspirollo	Unknown
Aroclor	Monsanto
Aroclor B	P. R. Mallory & Co.
Asbestol	American Corp.
ASK	Queensboro Transformer and Machinery Corp.
Askarel*	ESCO Mfg. Co.
Askarel*	Ferranti-Packard Ltd.
Askarel*	Hevi-Duty Electric
Askarel*	Niagara Transformer Corp.
Askarel*	Queensboro Transformer and Machinery Corp.
Askarel*	Research-Cottrell
Askarel*	Universal Mfg. Corp.
Capacitor 21	Monsanto
Chlorextol	Allis Chalmers
Chlorinol	Sprague Electric Co.
Clophen	Bayer (Germany)
Clorphen	Jard Corp.
Clorinol	Sprague Electric Co.
Diaclor	Sangamo Electric
DK	Caffaro (Italy)
Dykanol	Cornell Dubilier
EEC-18	Niagara Transformer Corp.
EEC-18	Power Zone Transformer
Elemex	McGraw Edison
Eucarel	Electrical Utilities Corp.
Fenclor	Caffaro (Italy)
Hyvol	Aerovox
Inclor	Caffaro (Italy)
Inerteen	Westinghouse
Kanechlor	Kanegafuchi Chemical Industry
Kennechlor	Kanegafuchi Chemical Industry
Kennechlor	Mitsubishi (Japan)
Magvar	General Electric
MCS 1489	Monsanto
Nepolin	Unknown
Non-Flammable Liquid	ITE Circuit Breaker Co.
No-Flamol	Wagner
Phenoclor	Prodelec (France)
Pydraul***	Monsanto
Pyrallene	Prodelec (France)
Pyranol	General Electric
Pyroclor	Monsanto
Saf-T-Kuhl	Kuhlman Electric
Santotherm	Mitsubishi (Japan)
Santotherm FR	Monsanto
Santovac 1 and 2	Monsanto
Therminol**	Monsanto

\*Generic name used for non-flammable insulating liquids in transformers and capacitors.

\*\*Various products used as heat transfer fluids, such as Therminol FR-0, were manufactured under this name. Note: Therminol 66 is a non-PCB fluid.

\*\*\*Various products used as hydraulic fluid, such as Pydraul A-200, were manufactured under this name.

PCB TRANSFORMERS AND CAPACITORS  
LISTED BY MANUFACTURER

The following are the trade names used by various manufacturers for the dielectric fluids in PCB transformers and capacitors. This information can be found on the transformer or capacitor manufacturer's nameplate.

<u>MANUFACTURER</u>	<u>TRADE NAME</u>
Aerovox	Hyvol
Allis-Chalmers	Chlorextol
American Corp.	Asbestol
Axel Electronics	
Bayer	Clophen
Caffaro	Dk, Fenclor, Inclocor
Capacitor Specialists	
Chemko	
Cornell Dubilier	Dykanol
Dings Co.	
Electrical Utilities Corp.	Eucarel
Electro Engineering Works	
Electromagnetic Filter Co.	
Envirotech Buell	
Eriez Magnets	Pyranol
ESCO Mfg. Co.	Askarel*
Ferranti-Packard Ltd.	Askarel*
General Electric	Pyranol, Magvar
Geneva Industries	
H. K. Porter	
Helena Corp.	
Hevi-Duty Electric	Askarel*
ITE Circuit Breaker	Non-Flammable Liquid
Jard Corp.	Clorphen
Kanegafuchi	Kennechlor, Kanechlor
Kuhlman Electric	Saf-T-Kuhl
McGraw Edison	Elemex
Maloney Electric	
Mitsubishi	Kennechlor, Santotherm
Monsanto	Aroclor, Capacitor 21, MCS 1489, Santotherm FR, Pyroclor, Therminol** Pydraul***, Santovac 1 and 2
Myron Zucker	
Niagara Transformer Corp.	Askarel*, EEC-18, N-3
P. R. Mallory & Co.	Aroclor B
Power Zone Transformer	EEC-18
Prodelec	Phenoclor, Pyralene
Queensboro Transformer and Machinery Corp.	Askarel*, ASK
R. C. Uptegraff	ALC
R. F. Interonics	
Reliance Electric Co.	
Research-Cottrell	Askarel*
Sangamo Electric	Diaclor
Sovol	
Sprague Electric Co.	Chlorinol
Standard Transformer Corp.	
Stens Magnetics	
Tobe Deutschmann Labs.	
Universal Mfg. Corp.	Askarel*
Van Tran Electric	
Versatex	
Wagner Electric	No-Flamol
Westinghouse Electric	Inerteen
York Electronics	
Unknown	Nepolin, Apirolino

\*\*\*\* See reverse side

HIGHLIGHTS OF THE PCB REGULATIONS  
UNDER TSCA 40 CFR 761

The following represents an outline of the main requirements of these regulations. Please refer to 40 CFR 761 for details.

Prohibitions

- \* The manufacture, processing, and distribution in commerce of PCBs is prohibited.

Authorizations

- \* The use of PCBs in electrical equipment is authorized under specified conditions.

Marking

- \* PCB transformers, capacitors, and containers must be marked with the specified M<sub>L</sub> label. PCB transformer enclosures, PCB storage areas and vehicles transporting PCBs must also be marked with the M<sub>L</sub> label.

Storage For Disposal

- \* PCB articles and containers must be dated when removed from service and placed into storage for disposal.
- \* May store non-leaking PCB articles and liquids containing <500 ppm PCB for 30 days.
- \* Liquids ≥500 ppm and any PCB article stored >30 days must be stored in an area that meets the requirements for a long term storage facility.
- \* PCB articles or containers must be disposed of within one year of the date removed from service.

Disposal

- \* PCB capacitors and liquids containing ≥500 ppm PCB must be incinerated in an EPA approved incinerator.
- \* Liquids containing between 50 and 500 ppm may be disposed of in an EPA approved: Incinerator; high efficiency boiler; or chemical waste landfill.
- \* Non-liquids containing ≥50 ppm PCB may be disposed of in either an EPA approved incinerator or chemical waste landfill.

## Highlights Of The PCB Regulations (cont.)

### Recordkeeping

- \* Owners or operators of PCB transformers must keep logs of the required periodic inspections of those units.
- \* Owners or operators of a facility using or storing at one time at least one or more PCB transformers, 50 or more large PCB capacitors, or 45 kg of PCBs in PCB containers must develop and maintain an Annual Document for each year any of these conditions are met. The Annual Document summarizes the types and amounts of PCBs and PCB equipment in use, in storage, and disposed of each calendar year and must be prepared by July 1 of the following year.
- \* Owners or operators of long term storage facilities must maintain logs of monthly inspections of the facility and maintain records tracking PCBs and PCB items through the storage area.
- \* Michigan Public Act 60 requires that PCBs or PCB items transported for disposal be manifested. Facilities disposing of PCBs must have manifests for those shipments.

# HIGHLIGHTS OF CURRENT PCB REGULATIONS

## TRANSFORMERS\* Classification by PCB Concentration

## PCB CAPACITORS\* Containing >3 lbs. Fluid

Regulated Activity	"Non-PCB"	"PCB-Contaminated"	"PCB Equipment"	
	Less than 50 ppm	Between 50-500 ppm	500 ppm or greater	(by nameplate or if pre-1979)
Use	Use as dust control agent not permitted for fluid; otherwise unregulated	Authorized use for remainder of equipment useful life	Authorized use for remainder of equipment useful life	Authorized for remainder of useful life***
Servicing (not including coil removal or rebuilding)	Unregulated	Permitted, except for topping off with PCB mixtures	Permitted, including topping off fluid with PCB mixtures	N/A
Rebuilding	Unregulated	Permitted by owner or 6.e.3.(b) exempted service company	Not permitted	N/A
Inspection and Recordkeeping	Unregulated	Not required	Quarterly inspection required** at least 3 years after retirement	Not required
Marking/Labeling	Unregulated	Not required	Containers and equipment marked with M <sub>L</sub> label	If >2000 volts must mark immediately - if <2000 volts must mark when removed from service
Storage for Disposal	Unregulated	Approved facility required for fluid or fluid-filled transformer	In approved facility if stored for <30 days	
Disposal of Fluid	Unregulated (except as shown above for use)	Incineration in high-efficiency boilers or EPA approved incinerators	EPA approved high-temperature incineration required	EPA approved
Disposal of transformer carcass	Unregulated	Unregulated	Drain of free flowing liquid and landfill or incinerate	EPA approved incinerator

\*Excluding railroad transformers, equipment posing an exposure risk to food or feed, and transformers in or near "Commercial Buildings". Refer to 40 CFR 761 for details.

\*\*Reduced to annual inspection if PCB concentration is less than 60,000 ppm (6 percent) or 100 percent secondary containment is provided.

\*\*\*PCB capacitors not in "restricted access" situations (e.g. on pole mount) must be removed by October 1, 1988.

The Environmental Protection Agency published A final rule in the Federal Register, (40 CFR 761, 50 FR 29170) on July 17, 1985 for Polychlorinated Biphenyls in Electrical Transformers. This rule was subsequently codified at 40 CFR 761, Subpart G. This rule is often referred to as the "Fire Rule" and:

1. Prohibits the use of network PCB transformers with 480 volt or higher secondary voltage in or near commercial buildings after October 1, 1990.
2. Requires the installation of enhanced electrical protection on PCB transformers installed in or near commercial buildings by October 1, 1990.
3. Prohibits further installation of PCB transformers in or near commercial buildings after October 1, 1985.
4. Requires the registration of all PCB transformers with fire response personnel and building owners by December 1, 1985.
5. Requires the marking of the exterior of all PCB transformer locations by December 1, 1985.
6. Requires the removal of all combustibles located near PCB transformers by December 1, 1985.
7. EPA is also requiring that owners of PCB transformers involved in fire-related incidents immediately notify the National Response Center, and take measures as soon as practically and safely possible to contain any potential releases of PCBs or incomplete combustion products to water.

**Most commonly identified problems in PCB inspections:**

- 1) Failure to develop and maintain annual documents; annual documents incomplete; failure to include drums and contaminated transformers on annual documents (40 CFR 761.180)
- 2) Failure to conduct required transformer inspections either annually or quarterly and maintain required records (40 CFR 761.30(a))
- 3) Inadequate transformer inspection reports; especially failure to date and identify activities carried out when a leak is discovered (40 CFR 761.30(a))
- 4) Failure to date containers or items placed in storage for disposal (40 CFR 761.65(c))
- 5) Failure to mark storage areas (temporary and long term) with the required M mark (40 CFR 761.40(a))
- 6) Failure to identify and disposal sites and methods on the manifests (in comments section if necessary); failure to require and retain certificates of disposal from end disposal sites (40 CFR 761.60)
- 7) Failure to mark equipment as required; use of small or improper labels when the large M is appropriate (40 CFR 761.40, 40 CFR 761.45)
- 8) Exceeding storage time limits for temporary storage (40 CFR 761.65)
- 9) Inadequate containment for long term storage and for waiving requirement of quarterly transformer inspections; containment with cracks, drains to outside, porous construction materials (40 CFR 761.30, 40 CFR 761.65)
- 10) Failure to conduct and document monthly inspections of storage area (40 CFR 761.65)

**PCB DISPOSAL COMPANIES**

<b><u>COMPANY</u></b>	<b><u>ADDRESS</u></b>	<b><u>PHONE</u></b>
<b><u>Incinerator</u></b>		
ENSCO	P.O. Box 1957 Eldorado, AR 71730	501-863-7173
EPA Mobile Incinerator	Woodbridge Avenue Rariton Depot, Bldg 10 Edison, NJ 08837	201-321-6635
General Electric	100 Woodlawn Avenue Pittsfield, MA 01201	413-494-3729
Pyrochem	P.O. Box 907 Coffeyville, KS	316-251-4782
Pyrotech Systems	1st Tennessee Bank Bldg Third Floor Franklin, TN 37064	615-794-1351
Rollins	P.O. Box 609 Deer Park, TX 77536	713-479-6001
SCA Chemical Services	1000 East 111th Street 10th Floor Chicago, IL 60628	312-646-5700
<b><u>Alternate Thermal</u></b>		
*GA Technologies, Incorporated	P.O. Box 85608 San Diego, CA 92138	619-455-2517
J.M. Huber Corporation	P.O. Box 2831 Borger, TX 79007	806-274-6331
<b><u>Chemical</u></b>		
*American Mobile Oil Purification Co.	233 Broadway, 17th Floor New York, NY 10279	212-267-7073
*Chemical Decontamination Corporation	5 Riga Lane Baltic News Industrial Park Birdsboro, PA 19508	215-582-2766
Chemical Waste Management	1550 Baner Road Model City, NY 14107	716-754-8231
Environmental International, Inc.	912 Scott Kansas City, KS 66105	800-255-0514

\*PERMITTED TO OPERATE IN ALL TEN EPA REGIONS

**Chemical (continued)**

Exceltech, Inc.	41638 Christy Street Fremont, CA 94538	415-659-0404
General Electric	1 River Road Schenectady, NY 12345	518-385-3134
National Oil Processing, Inc.	P.O. Box 1062 Coffeyville, KS 67337	800-345-6573
Niagara Mohawk Power Corporation	300 Erie Boulevard West Syracuse, NY 13202	315-474-1511
*PPM, Inc.	1875 Forge Street Tucker, GA 30084	404-934-0902
*Sunohio, Inc.	1700 Gateway Blvd S.E. Canton, OH 44707	216-452-0837
T & R Electric Supply Company, Inc.	Box 180 Colman, SD 57017	800-843-7994
*Transformer Consultants	P.O. Box 3575 Akron, OH 44310	800-321-9580
Trinity Chemical Co. Inc.	Cloverleaf #3 Suite 507 Shawnee Mission, KS 66202	913-831-2290

**Solvent Extraction**

National Electric, Inc.	P.O. Box 820 Lakeville, MN 55044	800-328-4061
*PTI Services, Inc.	P.O. Box 871 Fairborn, OH 45324	513-879-0203
*Quadrex HPS, Inc.	1940 N.W. 67th Place Gainesville, FL 32601	904-373-6066
Unison Transformer Services, Inc.	P.O. Box 241085 Charlotte, NC 28224	502-287-0541

**Biological**

Detox Industries, Inc.	4800 Sugar Grove Blvd Four Sugar Grove, Suite 210 Stafford, TX 77477	713-240-0892
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\*PERMITTED TO OPERATE IN ALL TEN EPA REGIONS

**Chemical Waste Landfills**

Casmalia Resources	559 San Ysidro Road P.O. Box 5275 Santa Barbara, CA 93150	805-937-8449
CECOS International	56th St. & Niagara Falls Boulevard Niagara Falls, NY 14302	716-282-2676
CECOS International	5092 Aber Road Williamsburg, OH 45176	513-720-6114
Chemical Waste Mgmt	Alabama Inc. Box 55 Emelle, AL 35459	205-652-9531
Chemical Waste Mgmt	Box 471 Kettleman City, CA 93239	209-386-9711
Chem-Security Systems Incorporated	Star Route Alington, OR 98712	503-454-2777
Envirosafe Services, Inc. Of Idaho	P.O. Box 417 Boise, ID 83701	208-384-1500
SCA Chemical Services	Box 200 Model City, NY 14107	716-754-8231
U.S. Ecology, Inc.	Box 578 Beatty, NV 89003	702-553-2203
U.S. Pollution Control, Inc.	2000 Classen Center Suite 400 South Oklahoma City, OK 73106	405-528-8371

PCB SUMMARY DOCUMENT FOR 1984

ABC COMPANY  
Prepared: 1-10-85 *PCB*

<u>PCBs - In Service</u>	<u>UNITS</u>	<u>GALLONS</u>	<u>KG</u>
Transformers	2	690	3761
Capacitors	3	6.6	35.6
Containers	1	30	164

<u>PCBs Stored for Reuse</u>			
Transformers	0	0	0
Capacitors	1	3.2	17
Containers	0	0	0

<u>PCBs Stored for Disposal</u>			
Transformers	0	0	0
Capacitors	0	0	0
Containers	1	-	50

<u>PCBs Disposed Of</u>			
Transformers	0	0	0
Capacitors	1	1.7	9.3
Containers	1	-	100

<u>PCB Contaminated Equipment</u>			
In Service	2	37.3	129
Stored for Reuse	0	0	0
Stored for Disposal	0	0	0
Disposed of	0	0	0

\*\* See 1984 PCB Tracking Forms for equipment descriptions,  
storage and disposal details.

Facility Name: ABC Company  
 Address: 0 Main Street  
Anywhere, MI 49999

PCB TRACKING FORM

Period Covered: 1-1-84 thru 12-31-84  
 Preparation Date: 1-10-85  
 Prepared By: AB P.C. Byfenel  
V.P. Operations  
(517) 555-1212

No.	Item Description Use Location	Mfg	Serial No.	Volume Gallons	Weight KG	Contents	Status	Date Stored	Storage Site (Drum No.)	Ship Date	Manifest No.	*C/D?
1	500 KVA Transformer Substation 1A	GE	GEH G3462 PB	180	981	Pyranol	In Use					
2	1500 KVA Transformer Substation 2	Allis Chal.	398G51	510	2780	Chlorextrol	In Use					
3	50 KVA Pole Transformer Rear Parking Lot	Westhse	W8W311	35	121	Min Oil w/ 238 ppm PCBs	In Use					
4	15 KVAR Capacitor Ajax Furnace	GE	G39512	1.7	9.3	Pyranol	In Use					
5	15 KVAR Capacitor Ajax Furnace	GE	G39513	1.7	9.3	Pyranol	In Use					
6	15 KVAR Capacitor Ajax Furnace	GE	G39511	1.7	9.3	<del>In Use</del> PYRANOL	Dispd	10-2-83	Substation 2 Drum #83-1	1-3-84	MI000371	yes
7	50 KVAR Capacitor Furnace Surge Control	GE	A10001	3.2	17	Pyranol	In Use					
8	50 KVAR Capacitor Maintenance Crip	GE	A10002	3.2	17	Pyranol	Stored Reuse					
9	55 Gallon Drum Transformer Oil Substation 2	GE		30	164	Pyranol	In Use					
10	55 Gallon Drum (84-1) Substation 2				50	Small C's Debris rags absorbent	Stored Disp	5-30-84	Substation 2 Drum #84-1			
11	55 Gallon Drum (83-1) Substation 2				100	Item #6 above absorbent	Stored Dispd	10-2-83	Substation 2	1-3-84	MI000371	yes
12	Compensator Starter Switch #1 Air Comp	GE	1L2H14	2.3	7.9	Untested Mineral Oil	In Use					

\*C/D - Certificate of Destruction

ABC COMPANY

# PCB Transformer Inspection Record

1984

Manufacturer General Electric

Location North end Main Sub

Complete left section at least once per calendar quarter. If leaks are discovered, complete the right part. Action to contain the leak must be taken immediately. Action to repair/replace the unit must be initiated within 48 hours. Describe and date all actions taken in the area provided below.

<u>Inspection Date</u>	<u>Inspected by</u>	<u>Non-Leaking</u>	<u>Leaking</u>	<u>Leak Location--Quantity</u>	<u>Date*</u>	<u>Repairs Completed</u>

[illegible]

\*Date if different from inspection date

## PCB Transformer Inspection Sheet

Date 1 Nov 83

Inspectors Name

RA Fischer

Location	Transformer Type *	Gallons Dielectric	Leak Check	Action Taken and Serial Number
<del>Warehouse</del>	<del>W</del>	<del>376</del>		
# 4 & 5 Chiller	G.E.	175	OK	
Sub 1	AC AC	306 306	OK	
Sub 2	AC AC	306 306	OK	
Sub 3	AC AC	336 336	OK	
Sub 4	AC AC	306 306	OK	
Sub 5	AC AC AC AC	343 306 306 343	OK	
Sub 6	AC AC	306 306	OK	
Sub 7	AC AC	306 306	OK	
Sub 8	AC AC	306 306	OK	
Sub 9	AC AC	306 306	OK	
Sub 10	AC AC AC AC	306 306 312 306		81428 - DROP IN CAN PREP ON EDGE - REPAIR WITH T-1-S EMERG. REP KIT. 1600 1 NOV 83 Ref

\* W= Westinghouse, G.E. = General Electric, AC = Allis Chalmers

\*\* Use this column only if a leak is discovered.

INSPECTOR \_\_\_\_\_

PCB LEAK REPAIR AND MAINTENANCE LOG

Note: This form is to be completed for all PCB transformer leak incidences.

Serial Number: \_\_\_\_\_

Date Leak Was Discovered: \_\_\_\_\_

Estimated amount of fluid released: \_\_\_\_\_

Location of any leak: \_\_\_\_\_

Description of Clean-Up and Repair: \_\_\_\_\_

\_\_\_\_\_

Repair Initiated Date \_\_\_\_\_

Following a leak repair a daily inspection must follow until it is noted that there is no leak.

	<u>DATE</u>	<u>LEAK</u>
		<u>YES</u> <u>NO</u>
1.		
2.		
3.		
4.		
5.		
6.		
7.		

Contractor Used: \_\_\_\_\_

Records Retention Three (3) years.

Per PCB Regulations, 40CFR761.30 authorizations.

NOTE: - Proper Disposal must comply with 40CFR761-60.

- Active releases of PCB's must be contained.

Sec.

**Subpart B—Manufacturing, Processing, Distribution in Commerce, and Use of PCBs and PCB Items**

761.20 Prohibitions.

761.30 Authorizations.

**Subpart C—Marking of PCBs and PCB Items**

761.40 Marking requirements.

761.45 Marking formats.

**Subpart D—Storage and Disposal**

761.60 Disposal requirements.

761.65 Storage for disposal.

761.70 Incineration.

761.75 Chemical waste landfills.

761.79 Decontamination.

**Subpart E—Exemptions**

761.80 Manufacturing, processing, and distribution in commerce exemptions.

**Subpart F—[Reserved]**

**Subpart G—PCB Spill Cleanup Policy**

761.120 Scope.

761.123 Definitions.

761.125 Requirements for PCB spill cleanup.

761.130 Sampling requirements.

761.135 Effect of compliance with this policy and enforcement.

**Subparts H and I—[Reserved]**

**Subpart J—Records and Reports**

761.180 Records and monitoring.

761.185 Certification program and retention or records by importers and persons generating PCBs in excluded manufacturing processes.

761.187 Reporting importers and by persons generating PCBs in excluded manufacturing processes.

761.193 Maintenance of monitoring records by persons who import, manufacture, process, distribute in commerce, or use chemicals containing inadvertently generated PCBs.

**AUTHORITY:** 15 U.S.C. 2605, 2607, and 2611; Subpart G also issued under 15 U.S.C. 2614 and 2616.

**Subpart A—General**

§ 761.1 Applicability.

(a) This part establishes prohibitions of, and requirements for, the manufacture, processing, distribution in com-

**PART 761—POLYCHLORINATED BIPHENYLS (PCBs) MANUFACTURING, PROCESSING, DISTRIBUTION IN COMMERCE, AND USE PROHIBITIONS**

**Subpart A—General**

Sec.

761.1 Applicability.

761.3 Definitions.

761.19 References.

merce, use, disposal, storage, and marking of PCBs and PCB Items.

(b) This part applies to all persons who manufacture, process, distribute in commerce, use, or dispose of PCBs or PCB Items. Substances that are regulated by this rule include, but are not limited to, dielectric fluids, contaminated solvents, oils, waste oils, heat transfer fluids, hydraulic fluids, paints, sludges, slurries, dredge spoils, soils, materials contaminated as a result of spills, and other chemical substances or combination of substances, including impurities and byproducts and any byproduct, intermediate or impurity manufactured at any point in a process. Most of the provisions of this part apply to PCBs only if PCBs are present in concentrations above a specified level. For example, Subpart D applies generally to materials at concentrations of 50 parts per million (ppm) and above. Also certain provisions of Subpart B apply to PCBs inadvertently generated in manufacturing processes at concentrations specified in the definition of "PCB" under § 761.3. No provision specifying a PCB concentration may be avoided as a result of any dilution, unless otherwise specifically provided.

(c) Definitions of the terms used in these regulations are in Subpart A. The basic requirements applicable to disposal and marking of PCBs and PCB Items are set forth in Subpart D—Disposal of PCBs and PCB Items and in Subpart C—Marking of PCBs and PCB Items. Prohibitions applicable to PCB activities are set forth in Subpart B—Manufacture, Processing, Distribution in Commerce, and Use of PCBs and PCB Items. Subpart B also includes authorizations from the prohibitions. Subparts C and D set forth the specific requirements for disposal and marking of PCBs and PCB Items.

(d) Section 15 of the Toxic Substances Control Act (TSCA) states that failure to comply with these regulations is unlawful. Section 16 imposes liability for civil penalties upon any person who violates these regulations, and the Administrator can establish appropriate remedies for any violations subject to any limitations included in section 16 of TSCA. Section 16 also subjects a person to criminal pros-

ecution for a violation which is knowing or willful. In addition, section 17 authorizes Federal district courts to enjoin activities prohibited by these regulations, compel the taking of actions required by these regulations, and issue orders to seize PCBs and PCB Items manufactured, processed or distributed in violation of these regulations.

(e) These regulations do not preempt other more stringent Federal statutes and regulations.

(f) Unless and until superseded by any new more stringent regulations issued under EPA authorities, or any permits or any pretreatment requirements issued by EPA, a state or local government that affect release of PCBs to any particular medium:

(1) Persons who inadvertently manufacture or import PCBs generated as unintentional impurities in excluded manufacturing processes, as defined in § 761.3, are exempt from the requirements of Subpart B of this part, provided that such persons comply with Subpart J of this part, as applicable.

(2) Persons who process, distribute in commerce, or use products containing PCBs generated in excluded manufacturing processes defined in § 761.3 are exempt from the requirements of Subpart B provided that such persons comply with Subpart J of this part, as applicable.

(3) Persons who process, distribute in commerce, or use products containing recycled PCBs defined in § 761.3, are exempt from the requirements of Subpart B of this part, provided that such persons comply with Subpart J of this part, as applicable.

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605))

[44 FR 31542, May 31, 1979, as amended at 49 FR 28189, July 10, 1984]

#### § 761.3 Definitions.

For the purpose of this part:

"Administrator" means the Administrator of the Environmental Protection Agency, or any employee of the Agency to whom the Administrator may either herein or by order delegate his authority to carry out his functions, or any person who shall by oper-

ation of law be authorized to carry out such functions.

"Agency" means the United States Environmental Protection Agency.

"Byproduct" means a chemical substance produced without separate commercial intent during the manufacturing or processing of another chemical substance(s) or mixture(s).

"Capacitor" means a device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by a dielectric. Types of capacitors are as follows:

(1) "Small capacitor" means a capacitor which contains less than 1.36 kg (3 lbs.) of dielectric fluid. The following assumptions may be used if the actual weight of the dielectric fluid is unknown. A capacitor whose total volume is less than 1,639 cubic centimeters (100 cubic inches) may be considered to contain less than 1.36 kgs (3 lbs.) of dielectric fluid and a capacitor whose total volume is more than 3,278 cubic centimeters (200 cubic inches) must be considered to contain more than 1.36 kg (3 lbs.) of dielectric fluid. A capacitor whose volume is between 1,639 and 3,278 cubic centimeters may be considered to contain less than 1.36 kg (3 lbs.) of dielectric fluid if the total weight of the capacitor is less than 4.08 kg (9 lbs.).

(2) "Large high voltage capacitor" means a capacitor which contains 1.36 kg (3 lbs.) or more of dielectric fluid and which operates at 2,000 volts (a.c. or d.c.) or above.

(3) "Large low voltage capacitor" means a capacitor which contains 1.36 kg (3 lbs.) or more of dielectric fluid and which operates below 2,000 volts (a.c. or d.c.).

"Chemical substance", (1) except as provided in paragraph (2) of this definition, means any organic or inorganic substance of a particular molecular identity, including: Any combination of such substances occurring in whole or part as a result of a chemical reaction or occurring in nature, and any element or uncombined radical.

(2) Such term does not include: Any mixture; any pesticide (as defined in the Federal Insecticide, Fungicide, and Rodenticide Act) when manufactured, processed, or distributed in commerce for use as a pesticide; tobacco or any

tobacco product; any source material, special nuclear material, or byproduct material (as such terms are defined in the Atomic Energy Act of 1954 and regulations issued under such Act); any article the sale of which is subject to the tax imposed by section 4181 of the Internal Revenue Code of 1954 (determined without regard to any exemptions from such tax provided by section 4182 or section 4221 or any provisions of such Code); and any food, food additive, drug, cosmetic, or device (as such terms are defined in section 201 of the Federal Food, Drug, and Cosmetic Act) when manufactured, processed, or distributed in commerce for use as a food, food additive, drug, cosmetic, or device.

"Chemical waste landfill" means a landfill at which protection against risk of injury to health or the environment from migration of PCBs to land, water, or the atmosphere is provided from PCBs and PCB Items deposited therein by locating, engineering, and operating the landfill as specified in § 761.75.

"Commerce" means trade, traffic, transportation, or other commerce:

(1) Between a place in a State and any place outside of such State, or

(2) Which affects trade, traffic, transportation, or commerce described in paragraph (1) of this definition.

"Disposal" means intentionally or accidentally to discard, throw away, or otherwise complete or terminate the useful life of PCBs and PCB Items. Disposal includes spills, leaks, and other uncontrolled discharges of PCBs as well as actions related to containing, transporting, destroying, degrading, decontaminating, or confining PCBs and PCB Items.

"Distribute in commerce" and "Distribution in Commerce" when used to describe an action taken with respect to a chemical substance, mixture, or article containing a substance or mixture means to sell, or the sale of, the substance, mixture, or article in commerce; to introduce or deliver for introduction into commerce, or the introduction or delivery for introduction into commerce of the substance, mixture, or article; or to hold or the holding of, the substance, mixture, or arti-

cle after its introduction into commerce.

"Excluded manufacturing process" means a manufacturing process in which quantities of PCBs, as determined in accordance with the definition of inadvertently generated PCBs, calculated as defined, and from which releases to products, air, and water meet the requirements of paragraphs (1) through (5) of this definition, or the importation of products containing PCBs as unintentional impurities, which products meet the requirements of paragraph (1) and (2) of this definition.

(1) The concentration of inadvertently generated PCBs in products leaving any manufacturing site or imported into the United States must have an annual average of less than 25 ppm, with a 50 ppm maximum.

(2) The concentration of inadvertently generated PCBs in the components of detergent bars leaving the manufacturing site or imported into the United States must be less than 5 ppm.

(3) The release of inadvertently generated PCBs at the point at which emissions are vented to ambient air must be less than 10 ppm.

(4) The amount of inadvertently generated PCBs added to water discharged from a manufacturing site must be less than 100 micrograms per resolvable gas chromatographic peak per liter of water discharged.

(5) Disposal of any other process wastes above concentrations of 50 ppm PCB must be in accordance with Subpart D of this part.

"Fluorescent light ballast" means a device that electrically controls fluorescent light fixtures and that includes a capacitor containing 0.1 kg or less of dielectric.

"Impurity" means a chemical substance which is unintentionally present with another chemical substance.

"In or Near Commercial Buildings" means within the interior of, on the roof of, attached to the exterior wall of, in the parking area serving, or within 30 meters of a non-industrial non-substation building. Commercial buildings are typically accessible to both members of the general public

and employees, and include: (1) Public assembly properties, (2) educational properties, (3) institutional properties, (4) residential properties, (5) stores, (6) office buildings, and (7) transportation centers (e.g., airport terminal buildings, subway stations, bus stations, or train stations).

"Incinerator" means an engineered device using controlled flame combustion to thermally degrade PCBs and PCB Items. Examples of devices used for incineration include rotary kilns, liquid injection incinerators, cement kilns, and high temperature boilers.

"Industrial building" means a building directly used in manufacturing or technically productive enterprises. Industrial buildings are not generally or typically accessible to other than workers. Industrial buildings include buildings used directly in the production of power, the manufacture of products, the mining of raw materials, and the storage of textiles, petroleum products, wood and paper products, chemicals, plastics, and metals.

"Leak" or "leaking" means any instance in which a PCB Article, PCB Container, or PCB Equipment has any PCBs on any portion of its external surface.

"Manned Control Center" means an electrical power distribution control room where the operating conditions of a PCB Transformer are continuously monitored during the normal hours of operation (of the facility), and, where the duty engineers, electricians, or other trained personnel have the capability to deenergize a PCB Transformer completely within 1 minute of the receipt of a signal indicating abnormal operating conditions such as an overtemperature condition or overpressure condition in a PCB Transformer.

"Manufacture" means to produce, manufacture, or import into the customs territory of the United States.

"Manufacturing process" means all of a series of unit operations operating at a site, resulting in the production of a product.

"Mark" means the descriptive name, instructions, cautions, or other information applied to PCBs and PCB Items, or other objects subject to these regulations.

"Marked" means the marking of PCB Items and PCB storage areas and transport vehicles by means of applying a legible mark by painting, fixation of an adhesive label, or by any other method that meets the requirements of these regulations.

"Mixture" means any combination of two or more chemical substances if the combination does not occur in nature and is not, in whole or in part, the result of a chemical reaction; except that such term does include any combination which occurs, in whole or in part, as a result of a chemical reaction if none of the chemical substances comprising the combination is a new chemical substance and if the combination could have been manufactured for commercial purposes without a chemical reaction at the time the chemical substances comprising the combination were combined.

"Municipal solid wastes" means garbage, refuse, sludges, wastes, and other discarded materials resulting from residential and non-industrial operations and activities, such as household activities, office functions, and commercial housekeeping wastes.

"On site" means within the boundaries of a contiguous property unit.

"PCB" and "PCBs" means any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substance. Refer to § 761.1(b) for applicable concentrations of PCBs. PCB and PCBs as contained in PCB items are defined in § 761.3. For any purposes under this part, inadvertently generated non-Aroclor PCBs are defined as the total PCBs calculated following division of the quantity of monochlorinated biphenyls by 50 and dichlorinated biphenyls by 5.

"PCB Article" means any manufactured article, other than a PCB Container, that contains PCBs and whose surface(s) has been in direct contact with PCBs. "PCB Article" includes capacitors, transformers, electric motors, pumps, pipes and any other manufactured item (1) which is formed to a specific shape or design during manufacture, (2) which has end use function(s) dependent in whole or in

part upon its shape or design during end use, and (3) which has either no change of chemical composition during its end use or only those changes of composition which have no commercial purpose separate from that of the PCB Article.

"PCB Article Container" means any package, can, bottle, bag, barrel, drum, tank, or other device used to contain PCB Articles or PCB Equipment, and whose surface(s) has not been in direct contact with PCBs.

"PCB Container" means any package, can, bottle, bag, barrel, drum, tank, or other device that contains PCBs or PCB Articles and whose surface(s) has been in direct contact with PCBs.

"PCB Equipment" means any manufactured item, other than a PCB Container or a PCB Article Container, which contains a PCB Article or other PCB Equipment, and includes microwave ovens, electronic equipment, and fluorescent light ballasts and fixtures.

"PCB Item" is defined as any PCB Article, PCB Article Container, PCB Container, or PCB Equipment, that deliberately or unintentionally contains or has a part of it any PCB or PCBs.

"PCB Transformer" means any transformer that contains 500 ppm PCB or greater.

"PCB-Contaminated Electrical Equipment" means any electrical equipment, including but not limited to transformers (including those used in railway locomotives and self-propelled cars), capacitors, circuit breakers, reclosers, voltage regulators, switches (including sectionalizers and motor starters), electromagnets, and cable, that contain 50 ppm or greater PCB, but less than 500 ppm PCB. Oil-filled electrical equipment other than circuit breakers, reclosers, and cable whose PCB concentration is unknown must be assumed to be PCB-Contaminated Electrical Equipment. (See § 761.30(a) and (h) for provisions permitting reclassification of electrical equipment containing 500 ppm or greater PCBs to PCB-Contaminated Electrical Equipment).

"Person" means any natural or judicial person including any individual, corporation, partnership, or associa-

tion; any State or political subdivision thereof; any interstate body; and any department, agency, or instrumentality of the Federal Government.

"Posing an exposure risk to food or feed" means being in any location where human food or animal feed products could be exposed to PCBs released from a PCB Item. A PCB Item poses an exposure risk to food or feed if PCBs released in any way from the PCB Item have a potential pathway to human food or animal feed. EPA considers human food or animal feed to include items regulated by the U.S. Department of Agriculture or the Food and Drug Administration as human food or animal feed; this includes direct additives. Food or feed is excluded from this definition if it is used or stored in private homes.

"Process" means the preparation of a chemical substance or mixture, after its manufacture, for distribution in commerce:

(1) In the same form or physical state as, or in a different form or physical state from, that in which it was received by the person so preparing such substance or mixture, or

(2) As part of an article containing the chemical substance or mixture.

"Qualified incinerator" means one of the following:

(1) An incinerator approved under the provisions of § 761.70. Any concentration of PCBs can be destroyed in an incinerator approved under § 761.70.

(2) A high efficiency boiler approved under the provisions of § 761.60(a)(3). Only PCBs in concentrations below 500 ppm can be destroyed in a high-efficiency boiler approved under § 761.60(a)(3).

(3) An incinerator approved under section 3005(c) of the Resource Conservation and Recovery Act (42 U.S.C. 6925(c)) (RCRA). Only PCBs in concentrations below 50 ppm can be destroyed in a RCRA-approved incinerator. The manufacturer seeking to qualify a process as a controlled waste process by disposing of wastes in a RCRA-approved incinerator must make a determination that the incinerator is capable of destroying less readily burned compounds than the PCB homologs to be destroyed. The manufacturer may use the same guid-

ance used by EPA in making such a determination when issuing an approval under section 3005(c) of RCRA. The manufacturer is also responsible for obtaining a reasonable assurance that the incinerator, when burning PCB wastes, will be operated under conditions which have been shown to enable the incinerator to destroy the less readily burned compounds.

"Recycled PCBs" are defined as those: intentionally manufactured PCBs which appear in the processing of paper products or asphalt roofing materials as PCB-contaminated raw materials and which meet the requirements of (1) through (5) of this definition.

(1) The concentration of Aroclor PCBs in paper products leaving any manufacturing site or imported into the United States must have an annual average of less than 25 ppm with a 50 ppm maximum.

(2) There are no detectable concentrations of Aroclor PCBs in asphalt roofing materials.

(3) The release of Aroclor PCBs at the point at which emissions are vented to ambient air must be less than 10 ppm.

(4) The amount of Aroclor PCBs added to water discharged from a processing site must at all times be less than 3 micrograms per liter ( $\mu\text{g/l}$ ) for total Aroclors (roughly 3 parts per billion (3 ppb)).

(5) Disposal of any other process wastes above concentrations of 50 ppm PCB must be in accordance with Subpart D of this part.

"Rupture of a PCB Transformer" means a violent or non-violent break in the integrity of a PCB Transformer caused by an overtemperature and/or overpressure condition that results in the release of PCBs.

"Sale for purposes other than resale" means sale of PCBs for purposes of disposal and for purposes of use, except where use involves sale for distribution in commerce. PCB Equipment which is first leased for purposes of use any time before July 1, 1979, will be considered sold for purposes other than resale.

"Small quantities for research and development" means any quantity of PCBs (1) that is originally packaged in

one or more hermetically sealed containers of a volume of no more than five (5.0) milliliters, and (2) that is used only for purposes of scientific experimentation or analysis, or chemical research on, or analysis of, PCBs, but not for research or analysis for the development of a PCB product.

"Storage for disposal" means temporary storage of PCBs that have been designated for disposal.

"Transport vehicle" means a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (e.g., trailer, railroad freight car) is a separate transport vehicle.

"Totally enclosed manner" means any manner that will ensure no exposure of human beings or the environment to any concentration of PCBs.

"Waste Oil" means used products primarily derived from petroleum, which include, but are not limited to, fuel oils, motor oils, gear oils, cutting oils transmission fluids, hydraulic fluids, and dielectric fluids.

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605))

[49 FR 25239, June 20, 1984, as amended at 49 FR 28189, July 10, 1984; 49 FR 29066, July 18, 1984; 49 FR 44638, Nov. 8, 1984; 50 FR 29199, July 17, 1985; 50 FR 32176, Aug. 9, 1985]

#### § 761.19 References.

##### (a) [Reserved]

(b) *Incorporations by reference.* The following material is incorporated by reference, and is available for inspection at the Office of the Federal Register Information Center, Rm. 8301, 1100 L St. NW., Washington, DC 20408. These incorporations by reference were approved by the Director of the Office of the Federal Register. These materials are incorporated as they exist on the date of approval and a notice of any change in these materials will be published in the **FEDERAL REGISTER**. Copies of the incorporated material may be obtained from the Environmental Protection Agency Document Control Officer (TS-793), Office of Pesticides and Toxic Substances, EPA, Rm. 106, 401 M St., SW., Washington, D.C. 20460, and from the American Society for Testing and Ma-

terials (ASTM), 1916 Race Street, Philadelphia, PA 19103.

References	CFR Citation
ASTM D-93-80 Standard Test Method for Flash Point by Pensky-Marlens Closed Tester.	§ 761.60(a)(3)(iii)(B)(6); § 761.75(b)(8)(iii).
ASTM D-129-64 (Reapproved 1978) Standard Test Method for Sulfur in Petroleum Products (General Bomb Method).	§ 761.60(a)(3)(iii)(B)(6).
ASTM D-240-76 (Reapproved 1980) Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuel by Bomb Calorimeter.	§ 761.60(a)(3)(iii)(B)(6).
ASTM D-482-80 Standard Test Method for Ash from Petroleum Products.	§ 761.60(a)(3)(iii)(B)(6).
ASTM D-524-81 Standard Test Method for Ramsbottom Carbon Residue of Petroleum Products.	§ 761.60(a)(3)(iii)(B)(6).
ASTM D-808-81 Standard Test Method for Chlorine in New and Used Petroleum Products (Bomb Method).	§ 761.60(a)(3)(iii)(B)(6).
ASTM D-923-81 Standard Test Method for Sampling Electrical Insulating Liquids.	§ 761.60(g)(1)(ii); § 761.60(g)(2)(ii).
ASTM D-1266-80 (Reapproved 1981) Standard Test Method for Sulfur in Petroleum Products (Lamp Method).	§ 761.60(a)(3)(iii)(B)(6).
ASTM D-1796-83 (Reapproved 1977) Methods for Water and Sediment in Crude Oils and Fuel Oils by Centrifuge.	§ 761.60(a)(3)(iii)(B)(6).
ASTM D-2158-80 Standard Test Method for Residues in Liquefied Petroleum (LP) Gas.	§ 761.60(a)(3)(iii)(B)(6).
ASTM D-2709-68 (Reapproved 1982) Standard Test Method for Water and Sediment in Distillate Fuel by Centrifuge.	§ 761.60(a)(3)(iii)(B)(6).
ASTM D-2784-80 Standard Test Method for Sulfur in Liquefied Petroleum Gases (Oxyhydrogen Burner or Lamp).	§ 761.60(a)(3)(iii)(B)(6).
ASTM D-3178-73 (Reapproved 1979) Standard Test Methods for Carbon and Hydrogen in the Analysis Sample of Coke and Coal.	§ 761.60(a)(3)(iii)(B)(6).
ASTM D-3278-78 (Reapproved 1982) Standard Test Methods for Flash Point of Liquid by Setflash Closed Tester.	§ 761.75(b)(8)(iii).
ASTM E-258-67 (Reapproved 1982) Standard Test Method for Total Nitrogen Inorganic Material by Modified KJELDAHL Method.	§ 761.60(a)(3)(iii)(B)(6).

[47 FR 22098, May 21, 1982, as amended at 49 FR 29067, July 18, 1984; 49 FR 36648, Sept. 19, 1984]

**Subpart B—Manufacturing, Processing, Distribution in Commerce, and Use of PCBs and PCB Items****§ 761.20 Prohibitions.**

Except as authorized in § 761.30, the activities listed in paragraphs (a) and (d) of this section are prohibited pursuant to section 6(e)(2) of TSCA. The requirements set forth in paragraphs (b) and (c) of this section concerning export and import of PCBs for purposes of disposal and PCB Items for purposes of disposal are established pursuant to section 6(e)(1) of TSCA. Subject to any exemptions granted pursuant to section 6(e)(3)(B) of TSCA, the activities listed in paragraphs (b) and (c) of this section are prohibited pursuant to section 6(e)(3)(A) of TSCA. In addition, the Administrator hereby finds, under the authority of section 12(a)(2) of TSCA, that the manufacture, processing, and distribution in commerce of PCBs at concentrations of 50 ppm or greater and PCB Items with PCB concentrations of 50 ppm or greater present an unreasonable risk of injury to health within the United States. This finding is based upon the well-documented human health and environmental hazard of PCB exposure, the high probability of human and environmental exposure to PCBs and PCB Items from manufacturing, processing, or distribution activities; the potential hazard of PCB exposure posed by the transportation of PCBs or PCB Items within the United States; and the evidence that contamination of the environment by PCBs is spread far beyond the areas where they are used. In addition, the Administrator hereby finds, for purposes of section 6(e)(2)(C) of TSCA, that any exposure of human beings or the environment to PCBs, as measured or detected by any scientifically acceptable analytical method, may be significant, depending on such factors as the quantity of PCBs involved in the exposure, the likelihood of exposure to humans and the environment, and the effect of exposure. For purposes of determining which PCB Items are totally enclosed, pursuant to section 6(e)(2)(C) of TSCA, since exposure to such Items may be significant, the Administrator further

finds that a totally enclosed manner is a manner which results in no exposure to humans or the environment to PCBs. The following activities are considered totally enclosed: distribution in commerce of intact, nonleaking electrical equipment such as transformers (including transformers used in railway locomotives and self-propelled cars), capacitors, electromagnets, voltage regulators, switches (including sectionalizers and motor starters), circuit breakers, reclosers, and cable that contain PCBs at any concentration and processing and distribution in commerce of PCB Equipment containing an intact, nonleaking PCB Capacitor. See paragraph (c)(1) of this section for provisions allowing the distribution in commerce of PCBs and PCB Items.

(a) No person may use any PCB, or any PCB Item regardless of concentration, in any manner other than in a totally enclosed manner within the United States unless authorized under § 761.30, except that an authorization is not required to use those PCBs or PCB Items resulting from an excluded manufacturing process or recycled PCBs defined in § 761.3, provided all applicable conditions of § 761.1(f) are met.

(b) No person may manufacture PCBs for use within the United States or manufacture PCBs for export from the United States without an exemption except that:

(1) No person may manufacture PCBs for use within the United States or manufacture PCBs for export from the United States without an exemption, except that an exemption is not required for PCBs manufactured in an excluded manufacturing process as defined in § 761.3, provided that all applicable conditions of § 761.1(f) are met.

(2) PCBs at concentrations less than 50 ppm may be imported or exported for purposes of disposal.

(c) No person may process or distribute in commerce any PCB, or any PCB Item regardless of concentration, for use within the United States or for export from the United States without an exemption, except that an exemption is not required to process or distribute in commerce PCBs or PCB

Items resulting from an excluded manufacturing process as defined in § 761.3, or to process or distribute in commerce recycled PCBs as defined in § 761.3 provided that all applicable conditions of § 761.1(f) are met.

(1) PCBs at concentrations of 50 ppm or greater, or PCB Items with PCB concentrations of 50 ppm or greater, sold before July 1, 1979 for purposes other than resale may be distributed in commerce only in a totally enclosed manner after that date.

(2) PCBs at concentrations of 50 ppm or greater, or PCB Items with PCB concentrations of 50 ppm or greater may be processed and distributed in commerce in compliance with the requirements of this Part for purposes of disposal in accordance with the requirements of § 761.60.

(3) PCBs or PCB Items may be exported for disposal until May 1, 1980, if an export notice is submitted at least thirty (30) days before the first shipment in any calendar year leaves the customs territory of the United States. Export notices must be submitted to the Document Control Officer (TS-793), Office of Toxic Substances, U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460. The generator of the PCB waste material intended for disposal, or an agent acting on his behalf, must certify to the best of his knowledge and belief that the information is complete and accurate. Each notice should contain the following information:

(i) Name, company name, address, and telephone number of the owner of the PCB waste material to be exported and the name and address of any person or agent acting on his behalf;

(ii) Estimated quantity of wastes to be shipped during the calendar year and the estimated number of shipments to be made and the dates when such shipments are expected to leave the customs territory of the United States;

(iii) Description of the PCBs or PCB Items being exported;

(iv) Country(s) of destination for the shipments;

(v) Name and address of facility(s) receiving the shipment and person(s)

responsible for receiving the shipment(s).

(vi) Method(s) of disposal and precautions taken to control release into the environment.

(vii) No less than 30 days after the end of each calendar quarter (March 31, June 30, September 30, and December 31) during which PCBs were exported for disposal, each person exporting the PCBs must submit a report to the Document Control Officer (TS-793), Office of Toxic Substances, U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460. The report shall list the quantity of PCB wastes in each shipment made during the quarter and include the date when each shipment left the customs territory of the United States and the information specified in paragraphs (c)(3)(i) and (iii) through (vi) of this section. If the quantity of wastes shipped during the calendar year exceeds by 25 percent or more the estimated quantities reported in paragraph (c)(3)(ii) of this section, a special export notice must be submitted to the Document Control Officer (TS-793) at the address given in paragraph (c)(3) at least 30 days before any additional shipments leave the customs territory of the United States and the notice shall include the information specified in paragraphs (c)(3)(i) through (vi) of this section.

(viii) Any person expecting to export PCB wastes for disposal in calendar year 1980 must submit an export notice at least thirty (30) days before the first shipment leaves the customs territory of the United States to the Document Control Officer (TS-793) at the address given in paragraph (c)(3) of this section, and the notice shall contain the information listed in paragraphs (c)(3)(i) through (vi) of this section.

(4) PCBs, at concentrations of less than 50 ppm, or PCB Items, with concentrations of less than 50 ppm, may be processed and distributed in commerce for purposes of disposal.

(d) The use of waste oil that contains any detectable concentration of PCB as a sealant, coating, or dust control agent is prohibited. Prohibited uses include, but are not limited to,

complete and rapid detection of faults, and high current faults and provide for  
transformers must be complete (480/277 volt network, 480  
use as a rust preventive on pipes. (viii) As of December 1, 1982, com-  
enough to be done with good engi-  
neering. (ix) Caution: 1. 94-469, 90 Stat. 2020, 115  
low current faults, which allow for rapid  
and to a great extent in 1982 and amended at  
Transformers 49 FR 25241, June 20, 1984, 49 FR 28196,  
non-volatile PCBs. 49 FR 44638, Nov. 3, 1984]  
PCBs 761.20. Authorization

PCBS § 761.30 Authorizations

[illegible]

(A) The rebuilding of these transformers for July-September and October-December, the remainder of the year used the live deer as donors. There is a potential technology subject to the following conditions: 30 which has been demonstrated to be effective and the physical conditions:

- (1) Use conditions: (i) As of October 1985, the early detection of suspected PCB transformers must include a low level of dielectric fluid of PCB transformers and for storage PCB transformers a low level of dielectric fluid of PCB transformers. The location of these transformers must be door/situation). The location of these transformers must be door/situation).

[illegible]

(C) The main secondary voltages (secondary voltage of a shielded transformer being in-  
voltage equal to or greater than 480 volts) shall be protected from overpressure or overtemperature  
number of the person to contact in the event of a fire involving the transformer, caused  
event of a fire involving the transformer, caused by a sustained low current fault. The  
volts, including 480/277 volt systems) (x) condition of the transformer, caused  
in or near commercial buildings is provided by a sustained low current fault. The  
men, National Fire Protection Association, Inc., 1190 North 17th Street, Quincy, MA 02269.

[illegible][illegible]

30 meters (98.4 feet) of the PCB Transformer(s). Is (Complete) Center almost occur within 1  
Information required to be provided to the public and receipt of the audio or  
PCB Transformers and lower second of visual signal indicating an abnormal  
building voltage network PCB Transformer condition caused by a sustained low  
owners in the network and is not similar to the condition of the electrical system.

(A) The specific location of the fault (e.g., check the circuit breaker, if it has buckles, and secondary voltages below 480 volts) in use are selected from a circuit breaker is utilized.

(b) The principal constituent of the incandescent discharge lamp is an electric filament, which is made of a material having a high melting point and is designed to operate at a temperature of approximately 2500°C. The filament is supported by a pair of leads which are connected to the base of the lamp. The base is made of a material which is resistant to the high temperatures of the filament and is designed to provide a secure electrical connection. The base is also designed to provide a means for mounting the lamp in a fixture. The lamp is filled with an inert gas, such as argon or neon, to prevent the filament from oxidizing and to provide a means for heat dissipation. The lamp is designed to operate at a voltage of 120V and a current of 0.5A. The lamp is designed to have a life expectancy of approximately 1000 hours.

(C) The type of transformer installed on the transformed electrical protection system required for the detection of sustained low current faults and the

complete and rapid deenergization of transformers must be properly installed, maintained, and set sensitive enough (in accordance with good engineering practices) to detect sustained low current faults and allow for rapid and total deenergization prior to PCB Transformer rupture (either violent or non violent rupture) and release of PCBs.

(vi) As of December 1, 1985, all PCB Transformers (including PCB Transformers in storage for reuse) must be registered with fire response personnel with primary jurisdiction (that is, the fire department or fire brigade which would normally be called upon for the initial response to a fire involving the equipment). Information required to be provided to fire response personnel includes:

(A) The location of the PCB Transformer(s) (the address(es) of the building(s) and the physical location of the PCB Transformer(s) on the building site(s) and for outdoor PCB Transformers, the location of the outdoor substation).

(B) The principal constituent of the dielectric fluid in the transformer(s) (e.g., PCBs, mineral oil, or silicone oil).

(C) The name and telephone number of the person to contact in the event of a fire involving the equipment.

(vii) As of December 1, 1985, PCB Transformers in use in or near commercial buildings must be registered with building owners. For PCB Transformers located in commercial buildings, PCB Transformer owners must register the transformers with the building owner of record. For PCB Transformers located near commercial buildings, PCB Transformer owners must register the transformers with all owners of buildings located within 30 meters of the PCB Transformer(s). Information required to be provided to building owners by PCB Transformer owners includes but is not limited to:

(A) The specific location of the PCB Transformer(s).

(B) The principal constituent of the dielectric fluid in the transformer(s) (e.g., PCBs, mineral oil, or silicone oil).

(C) The type of transformer installation (e.g., 208/120 volt network, 280/120 volt radial, 208 volt radial, 480 volt

network, 480/277 volt network, 480 volt radial, 480/277 volt radial).

(viii) As of December 1, 1985, combustible materials, including, but not limited to paints, solvents, plastics, paper, and sawn wood must not be stored within a PCB Transformer enclosure (i.e., in a transformer vault or in a partitioned area housing a transformer); within 5 meters of a transformer enclosure, or, if unenclosed (unpartitioned), within 5 meters of a PCB Transformer.

(ix) A visual inspection of each PCB Transformer (as defined in the definition of "PCB Transformer" under § 761.3) in use or stored for reuse shall be performed at least once every 3 months. These inspections may take place any time during the 3-month periods: January-March, April-June, July-September, and October-December as long as there is a minimum of 30 days between inspections. The visual inspection must include investigation for any leak of dielectric fluid on or around the transformer. The extent of the visual inspections will depend on the physical constraints of each transformer installation and should not require an electrical shutdown of the transformer being inspected.

(x) If a PCB Transformer is found to have a leak which results in any quantity of PCBs running off or about to run off the external surface of the transformer, then the transformer must be repaired or replaced to eliminate the source of the leak. In all cases any leaking material must be cleaned up and properly disposed of according to disposal requirements of § 761.60. Cleanup of the released PCBs must be initiated as soon as possible, but in no case later than 48 hours of its discovery. Until appropriate action is completed, any active leak of PCBs must be contained to prevent exposure of humans or the environment and inspected daily to verify containment of the leak. Trenches, dikes, buckets, and pans are examples of proper containment measures.

(xi) If a PCB Transformer is involved in a fire-related incident, the owner of the transformer must immediately report the incident to the National Response Center (toll-free 1-

800-424-8802; in Washington, D.C. 202-426-2675). A fire-related incident is defined as any incident involving a PCB Transformer which involves the generation of sufficient heat and/or pressure (by any source) to result in the violent or non-violent rupture of a PCB Transformer and the release of PCBs. Information must be provided regarding the type of PCB Transformer installation involved in the fire-related incident (e.g., high or low secondary voltage network transformer, high or low secondary voltage simple radial system, expanded radial system, primary selective system, primary loop system, or secondary selective system or other systems) and the readily ascertainable cause of the fire-related incident (e.g., high current fault in the primary or secondary or low current fault in secondary). The owner of the PCB Transformer must also take measures as soon as practically and safely possible to contain and control any potential releases of PCBs and incomplete combustion products into water. These measures include, but are not limited to:

(A) The blocking of all floor drains in the vicinity of the transformer.

(B) The containment of water runoff.

(C) The control and treatment (prior to release) of any water used in subsequent cleanup operations.

(xii) Records of inspection and maintenance history shall be maintained at least 3 years after disposing of the transformer and shall be made available for inspection, upon request by EPA. Such records shall contain the following information for each PCB Transformer:

(A) Its location.

(B) The date of each visual inspection and the date that leak was discovered, if different from the inspection date.

(C) The person performing the inspection.

(D) The location of any leak(s).

(E) An estimate of the amount of dielectric fluid released from any leak.

(F) The date of any cleanup, containment, repair, or replacement.

(G) A description of any cleanup, containment, or repair performed.

(H) The results of any containment and daily inspection required for uncorrected active leaks.

(xiii) A reduced visual inspection frequency of at least once every 12 months applies to PCB Transformers that utilize either of the following risk reduction measures. These inspections may take place any time during the calendar year as long as there is a minimum of 180 days between inspections.

(A) A PCB Transformer which has impervious, undrained, secondary containment capacity of at least 100 percent of the total dielectric fluid volume of all transformers so contained or

(B) A PCB Transformer which has been tested and found to contain less than 60,000 ppm PCBs (after 3 months of in service use if the transformer has been serviced for purposes of reducing the PCB concentration).

(xiv) An increased visual inspection frequency of at least once every week applies to any PCB Transformer in use or stored for reuse which poses an exposure risk to food or feed. The user of a PCB Transformer posing an exposure risk to food is responsible for the inspection, recordkeeping, and maintenance requirements under this section until the user notifies the owner that the transformer may pose an exposure risk to food or feed. Following such notification, it is the owner's ultimate responsibility to determine whether the PCB Transformer poses an exposure risk to food or feed.

(2) *Servicing conditions.* (i) Transformers classified as PCB-Contaminated Electrical Equipment (as defined in the definition of "PCB-Contaminated Electrical Equipment" under § 761.3) may be serviced (including rebuilding) only with dielectric fluid containing less than 500 ppm PCB.

(ii) Any servicing (including rebuilding) of PCB Transformers (as defined in the definition of "PCB Transformer" under § 761.3) that requires the removal of the transformer coil from the transformer casing is prohibited. PCB Transformers may be serviced (including topping off) with dielectric fluid at any PCB concentration.

(iii) PCBs removed during any servicing activity must be captured and either reused as dielectric fluid or dis-

posed of in accordance with the requirements of § 761.60. PCBs from PCB Transformers must not be mixed with or added to dielectric fluid from PCB-Contaminated Electrical Equipment.

(iv) Regardless of its PCB concentration, dielectric fluids containing less than 500 ppm PCB that are mixed with fluids that contain 500 ppm or greater PCB must not be used as dielectric fluid in any electrical equipment. The entire mixture of dielectric fluid must be considered to be greater than 500 ppm PCB and must be disposed of in an incinerator that meets the requirements in § 761.70.

(v) A PCB Transformer may be converted to PCB-Contaminated Electrical Equipment or to a non-PCB Transformer and a transformer that is classified as PCB-Contaminated Electrical Equipment may be reclassified to a non-PCB Transformer by draining, refilling and/or otherwise servicing the transformer. In order to reclassify, the transformer's dielectric fluid must contain less than 500 ppm PCB (for conversion to PCB-Contaminated Electrical Equipment) or less than 50 ppm PCB (for conversion to a non-PCB Transformer) after a minimum of three months of in-service use subsequent to the last servicing conducted for the purpose of reducing the PCB concentration in the transformer. In-service means that the transformer is used electrically under loaded conditions that raise the temperature of the dielectric fluid to at least 50° Centigrade. The Assistant Administrator may grant, without further rulemaking, approval for the use of alternative methods that simulate the loaded conditions of in-service use. All PCBs removed from transformers for purposes of reducing PCB concentrations are subject to the disposal requirements of § 761.60.

(vi) Any dielectric fluid containing 50 ppm or greater PCB used for servicing transformers must be stored in accordance with the storage for disposal requirements of § 761.65.

(vii) Processing and distribution in commerce of PCBs for purposes of servicing transformers is permitted only for persons who are granted an exemption under TSCA 6(e)(3)(B).

(b) *Use in and servicing of railroad transformers.* PCBs may be used in transformers in railroad locomotives or railroad self-propelled cars ("railroad transformers") and may be processed and distributed in commerce for purposes of servicing these transformers in a manner other than a totally enclosed manner subject to the following conditions:

(1) *Use restrictions.* (i) After July 1, 1983, the number of railroad transformers containing a PCB concentration greater than 60,000 ppm (6.0 percent on a dry weight basis) in use by any affected railroad organization may not exceed two-thirds of the total railroad transformers containing PCBs in use by that organization on January 1, 1982.

(ii) After January 1, 1984, the number of railroad transformers containing a PCB concentration greater than 60,000 ppm in use by any affected railroad organization may not exceed one-third of the total railroad transformers containing PCBs in use by that organization on January 1, 1982.

(iii) After July 1, 1984, use of railroad transformers that contain dielectric fluids with a PCB concentration greater than 60,000 ppm is prohibited.

(iv) After July 1, 1985, the number of railroad transformers containing a PCB concentration greater than 1,000 ppm (0.1 percent on a dry weight basis) in use by any affected railroad organization may not exceed two-thirds of the total railroad transformers containing PCBs in use by that organization on July 1, 1984.

(v) After January 1, 1986, the number of railroad transformers containing a PCB concentration greater than 1,000 ppm in use by any affected railroad organization may not exceed one-third of the total railroad transformers containing PCBs in use by that organization on July 1, 1984.

(vi) After July 1, 1986, use of railroad transformers that contain dielectric fluids with a PCB concentration greater than 1,000 ppm is prohibited.

(vii) The concentration of PCBs in the dielectric fluid contained in railroad transformers must be measured:

(A) Immediately upon completion of any authorized servicing of a railroad

transformer conducted for the purpose of reducing the PCB concentration in the dielectric fluid in the transformer, and

(B) Between 12 and 24 months after each servicing conducted in accordance with paragraph (b)(1)(vii)(A) of this section;

(C) The data obtained as a result of paragraphs (b)(1)(vii)(A) and (B) of this section shall be retained until January 1, 1991.

(2) *Servicing restrictions.* (i) If the coil is removed from the casing of a railroad transformer (e.g., the transformer is rebuilt), after January 1, 1982, the railroad transformer may not be refilled with dielectric fluid containing a PCB concentration greater than 50 ppm;

(ii) After January 1, 1982, railroad transformers may only be serviced with dielectric fluid containing less than 60,000 ppm PCBs, except as provided in paragraph (b)(2)(i) of this section;

(iii) After January 1, 1984, railroad transformers may only be serviced with dielectric fluid containing less than 1000 ppm PCB, except as provided in paragraph (b)(2)(i) of this section;

(iv) Dielectric fluid may be filtered through activated carbon or otherwise industrially processed for the purpose of reducing the PCB concentration in the fluid;

(v) Any PCB dielectric fluid that is used to service PCB railroad transformers must be stored in accordance with the storage for disposal requirements of § 761.65;

(vi) After July 1, 1979, processing and distribution in commerce of PCBs for purposes of servicing railroad transformers is permitted only for persons who are granted an exemption under TSCA section 6(e)(3)(B).

(vii) A PCB Transformer may be converted to a PCB-Contaminated Transformer or to a non-PCB Transformer by draining, refilling, and/or otherwise servicing the railroad transformer. In order to reclassify, the railroad transformer's dielectric fluid must contain less than 500 ppm (for conversion to PCB-Contaminated Transformer) or less than 50 ppm PCB (for conversion to a non-PCB Trans-

former) after a minimum of three months of inservice use subsequent to the last servicing conducted for the purpose of reducing the PCB concentration in the transformer.

(c) *Use in and servicing of mining equipment.* PCBs may be used in mining equipment and may be processed and distributed in commerce for purposes of servicing mining equipment in a manner other than a totally enclosed manner until January 1, 1982, subject to the following conditions:

(1) PCBs may be added to motors in mining equipment in mines or mining areas until January 1, 1982;

(2) PCB motors in loader-type mining equipment must be rebuilt as air-cooled or other non-PCB-containing motors whenever the motor is returned to a service shop for servicing;

(3) PCB motors in continuous miner-type equipment may be rebuilt as PCB motors until January 1, 1980;

(4) Any PCBs that are on hand to service or repair mining equipment must be stored in accordance with the storage for disposal requirements of § 761.65;

(5) After July 1, 1979, processing and distribution in commerce of PCBs for purposes of servicing mining equipment is permitted only for persons who are granted an exemption under TSCA section 6(e)(3)(B).

(d) *Use in heat transfer systems.* After July 1, 1984, intentionally manufactured PCBs may be used in heat transfer systems in a manner other than a totally enclosed manner at a concentration level of less than 50 ppm provided that the requirements of paragraphs (d)(1) through (7) of this section are met.

(1) Each person who owns a heat transfer system that ever contained PCBs at concentrations above 50 ppm must test for the concentration of PCBs in the heat transfer fluid of such a system no later than November 1, 1979, and at least annually thereafter. All test sampling must be performed at least three months after the most recent fluid refilling. When a test shows that the PCB concentration is less than 50 ppm, testing under this paragraph is no longer required.

(2) Within six months of a test performed under paragraph (d)(1) of this section that indicates that a system's fluid contains 50 ppm or greater PCB (0.005% on a dry weight basis), the system must be drained of the PCBs and refilled with fluid containing less than 50 ppm PCB. Topping-off with heat transfer fluids containing PCB concentrations of less than 50 ppm is permitted.

(3) After November 1, 1979, no heat transfer system that is used in the manufacture or processing of any food, drug, cosmetic or device, as defined in section 201 of the Federal Food, Drug, and Cosmetic Act, may contain transfer fluid with 50 ppm or greater PCB (0.005% on a dry weight basis).

(4) Addition of fluids containing PCB concentrations greater than 50 ppm is prohibited.

(5) Data obtained as a result of paragraph (d)(1) of this section must be retained for five years after the heat transfer system reaches 50 ppm PCB.

(6) Each person who owns a heat transfer system that contains PCBs must provide workers with gloves made of viton elastomer to protect workers from dermal exposure to PCBs.

(7) All persons who maintain a heat transfer system must wear viton elastomer gloves while doing maintenance work on that system.

(e) *Use in hydraulic systems.* After July 1, 1984, intentionally manufactured PCBs may be used in hydraulic systems in a manner other than a totally enclosed manner at a concentration level of less than 50 ppm provided that the requirements in paragraphs (e)(1) through (7) of this section are met.

(1) Each person who owns a hydraulic system that ever contained PCBs at concentrations above 50 ppm must test for the concentration of PCBs in the hydraulic fluid of each system no later than November 1, 1979, and at least annually thereafter. All test sampling must be performed at least three months after the most recent fluid refilling. When a test shows that the PCB concentration is less than 50 ppm, testing under this paragraph is no longer required.

(2) Within six months of a test under paragraph (e)(1) of this section that indicates that a system's fluid contains 50 ppm or greater PCB (0.005% on a dry weight basis), the system must be drained of the PCBs and refilled with fluid containing less than 50 ppm PCB. Topping-off with hydraulic fluids containing PCB concentrations less than 50 ppm to reduce PCB concentrations is permitted.

(3) Addition of PCBs at concentrations of greater than 50 ppm is prohibited.

(4) Hydraulic fluid may be drained from a hydraulic system and filtered, distilled, or otherwise serviced in order to reduce the PCB concentration below 50 ppm.

(5) Data obtained as a result of paragraph (e)(1) of this section must be retained for five years after the hydraulic system reaches 50 ppm.

(6) Each person who owns a hydraulic system that contains PCBs must provide gloves made of viton elastomer to protect workers from dermal exposure to PCBs.

(7) All persons who maintain a hydraulic system that contains PCBs must wear viton elastomer gloves while doing maintenance work on that system.

(f) *Use in carbonless copy paper.* Carbonless copy paper containing PCBs may be used in a manner other than a totally enclosed manner indefinitely.

(g) *Pigments.* Diarylide and Phthalocyanin pigments that contain 50 ppm or greater PCB may be processed, distributed in commerce, and used in a manner other than a totally enclosed manner until January 1, 1982, except that after July 1, 1979, processing and distribution in commerce of diarylide or phthalocyanin pigments that contain 50 ppm or greater PCB is permitted only for persons who are granted an exemption under TSCA section 6(e)(3)(B).

(h) *Use in and servicing of electromagnets, switches and voltage regulators.* PCBs at any concentration may be used in electromagnets, switches (including sectionalizers and motor starters), and voltage regulators and may be used for purposes of servicing this equipment (including rebuilding)

for the remainder of their useful lives, subject to the following conditions:

(1) *Use conditions.* (i) After October 1, 1985, the use and storage for reuse of any electromagnet which poses an exposure risk to food or feed is prohibited if the electromagnet contains greater than 500 ppm PCBs.

(ii) A visual inspection of each electromagnet subject to paragraph (h)(1)(i) shall be performed at least once every week according to the conditions contained in § 761.30(a)(1)(iii) and (iv).

(2) *Servicing conditions.* (i) Servicing (including rebuilding) any electromagnet, switch, or voltage regulator with a PCB concentration of 500 ppm or greater which requires the removal and rework of the internal components is prohibited.

(ii) Electromagnets, switches, and voltage regulators classified as PCB-Contaminated Electrical Equipment (as defined in the definition of "PCB-Contaminated Electrical Equipment" under § 761.3) may be serviced (including rebuilding) only with dielectric fluid containing less than 500 ppm PCB.

(iii) PCBs removed during any servicing activity must be captured and either reused as dielectric fluid or disposed of in accordance with the requirements of § 761.60. PCBs from electromagnets switches, and voltage regulators with a PCB concentration of at least 500 ppm must not be mixed with or added to dielectric fluid from PCB-Contaminated Electrical Equipment.

(iv) Regardless of its PCB (concentration, dielectric fluids containing less than 500 ppm PCB) that are mixed with fluids that contain 500 ppm or greater PCB must not be used as dielectric fluid in any electrical equipment. The entire mixture of dielectric fluid must be considered to be greater than 500 ppm PCB and must be disposed of in an incinerator that meets the requirements of § 761.70.

(v) An electromagnet, switch or voltage regulator with a PCB concentration of at least 500 ppm may be converted to PCB-Contaminated Electrical Equipment or to a non-PCB classification and PCB-Contaminated Electrical Equipment may be reclassified

to a non-PCB classification by draining, refilling and/or otherwise servicing the equipment. In order to be reclassified, the equipment's dielectric fluid must contain less than 500 ppm PCB (for conversion to PCB-Contaminated Electrical Equipment) or less than 50 ppm PCB (for conversion to a non-PCB classification) after a minimum of three months of in-service use subsequent to the last servicing conducted for the purpose of reducing the PCB concentration in the equipment. In-service use means the equipment is used electrically under loaded conditions. The Assistant Administrator may grant, without further rulemaking, approval for the use of alternative methods that simulate the loaded conditions of in-service use. All PCBs removed from this equipment for purposes of reducing PCB concentrations are subject to the disposal requirements of § 761.60.

(vi) Any dielectric fluid containing 50 ppm or greater PCB used for servicing electromagnets, switches, or voltage regulators must be stored in accordance with the storage for disposal requirements of § 761.65.

(vii) Processing and distribution in commerce of PCBs for purposes of servicing electromagnets, switches or voltage regulators is permitted only for persons who are granted an exemption under TSCA 6(e)(3)(B).

(i) *Use in compressors and in the liquid of natural gas pipelines.* PCBs may be used indefinitely in the compressors and in the liquids of natural gas pipelines at a concentration level of less than 50 ppm provided that they are marked in accordance with § 761.45(a).

(j) *Small quantities for research and development.* PCBs may be used in small quantities for research and development, as defined in § 761.3, in a manner other than a totally enclosed manner, indefinitely. Manufacture, processing, and distribution in commerce of PCBs in small quantities for research and development is permitted only for persons who have been granted an exemption under TSCA section 6(e)(3)(B).

(k) *Microscopy mounting medium.* PCBs may be used as a permanent microscopic mounting medium in a

manner other than a totally enclosed manner indefinitely. Manufacture, processing, and distribution in commerce of PCBs for purposes of use as a mounting medium are permitted only for persons who are granted an exemption under TSCA section 6(e)(3)(B).

(l) *Use in capacitors.* PCBs at any concentration may be used in capacitors, subject to the following conditions:

(1) *Use conditions.* (i) After October 1, 1988, the use and storage for reuse of PCB Large High Voltage Capacitors and PCB Large Low Voltage Capacitors which pose an exposure risk to food or feed is prohibited.

(ii) After October 1, 1988, the use of PCB Large High Voltage Capacitors and PCB Large Low Voltage Capacitors is prohibited unless the capacitor is used within a restricted-access electrical substation or in a contained and restricted-access indoor installation. A restricted-access electrical substation is an outdoor, fenced or walled-in facility that restricts public access and is used in the transmission or distribution of electric power. A contained and restricted-access indoor installation does not have public access and has an adequate roof, walls, and floor to contain any release of PCBs within the indoor location.

(2) [Reserved]

(m) *Use in and servicing of circuit breakers, reclosers and cable.* PCBs at any concentration may be used in circuit breakers, reclosers, and cable and may be used for purposes of servicing this electrical equipment (including rebuilding) for the remainder of their useful lives, subject to the following conditions:

(1) *Servicing conditions.* (i) Circuit breakers, reclosers, and cable may be serviced (including rebuilding) only with dielectric fluid containing less than 50 ppm PCB.

(ii) Any circuit breaker, recloser or cable found to contain at least 50 ppm PCBs may be serviced only in accordance with the conditions contained in 40 CFR 761.30(h)(2).

(2) [Reserved]

(n) *Microscopy immersion oil.* PCBs may be used as an immersion oil in fluorescence microscopy, in a manner

other than a totally enclosed manner indefinitely. Manufacture, processing, and distribution in commerce of PCBs for purposes of use as a low fluorescence immersion oil are permitted only for persons who are granted an exemption under TSCA section 6(e)(3)(B).

(o) *Optical liquids.* PCBs may be used as optical liquids in a manner other than a totally enclosed manner indefinitely. Manufacture, processing, and distribution in commerce of PCBs for purposes of use as optical liquids are permitted only for persons who are granted an exemption under TSCA section 6(e)(3)(B).

(Approved by the Office of Management and Budget under control number 2070-0003; the recordkeeping requirements of paragraphs (a)(1)(vi), (vii), and (xi) were approved by the Office of Management and Budget under control number 2070-0073; the recordkeeping requirements of paragraph (xii) were approved by the Office of Management and Budget under control number 2070-0007)

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020, 2025 (15 U.S.C. 2605))

[44 FR 31542, May 31, 1979. Redesignated at 47 FR 19527, May 6, 1982, and amended at 47 FR 37357, Aug. 25, 1983; 48 FR 135, Jan. 3, 1983; 49 FR 25241 and 25242, June 20, 1984; 49 FR 28190, and 28202, July 10, 1984; 50 FR 29199, July 17, 1985]

### Subpart C—Marking of PCBs and PCB Items

#### § 761.40 Marking requirements.

(a) Each of the following items in existence on or after July 1, 1978 shall be marked as illustrated in Figure 1 in § 761.44(a): The mark illustrated in Figure 1 is referred to as  $M_L$  throughout this subpart.

(1) PCB Containers;

(2) PCB Transformers at the time of manufacture, at the time of distribution in commerce if not already marked, and at the time of removal from use if not already marked. [Marking of PCB-Contaminated Electrical Equipment is not required];

(3) PCB Large High Voltage Capacitors at the time of manufacture, at the time of distribution in commerce if not already marked, and at the time of removal from use if not already marked;

(4) Equipment containing a PCB Transformer or a PCB Large High Voltage Capacitor at the time of manufacture, at the time of distribution in commerce if not already marked, and at the time of removal of the equipment from use if not already marked;

(5) PCB Large Low Voltage Capacitors at the time of removal from use;

(6) Electric motors using PCB coolants (See also paragraph (e) of this section).

(7) Hydraulic systems using PCB hydraulic fluid (See also paragraph (e) of this section);

(8) Heat transfer systems (other than PCB Transformers) using PCBs (See also paragraph (e) of this section);

(9) PCB Article Containers containing articles or equipment that must be marked under paragraph (a)(1) through (8) of this section;

(10) Each storage area used to store PCBs and PCB Items for disposal.

(b) As of October 1, 1978, each transport vehicle shall be marked on each end and side with  $M_L$  as described in § 761.45(a) if it is loaded with PCB Containers that contain more than 45 kg (99.4 lbs.) of PCBs in the liquid phase or with one or more PCB Transformers (See also paragraph (e) of this section).

(c) As of January 1, 1979, the following PCB Articles shall be marked with mark  $M_L$  as described in § 761.45(a):

(1) All PCB Transformers not marked under paragraph (a) of this section [marking of PCB-Contaminated Electrical Equipment is not required];

(2) All PCB Large High Voltage Capacitors not marked under paragraph (a) of this section

(i) Will be marked individually with mark  $M_L$ , or

(ii) If one or more PCB Large High Voltage Capacitors are installed in a protected location such as on a power pole, or structure, or behind a fence; the pole, structure, or fence shall be marked with mark  $M_L$ , and a record or procedure identifying the PCB Capacitors shall be maintained by the owner or operator at the protected location.

(d) As of January 1, 1979, all PCB Equipment containing a PCB Small Capacitor shall be marked at the time

of manufacture with the statement, "This equipment contains PCB Capacitor(s)". The mark shall be of the same size as the mark  $M_L$ .

(e) As of October 1, 1979, applicable PCB Items in paragraph (a)(1), (6), (7), and (8) of this section containing PCBs in concentrations of 50 to 500 ppm and applicable transport vehicles in paragraph (b) of this section loaded with PCB Containers that contain more than 45 kg (99.4 lbs.) of liquid PCBs in concentrations of 50 ppm to 500 ppm shall be marked with mark  $M_L$  as described in § 761.45(a).

(f) Where mark  $M_L$  is specified but the PCB Article or PCB Equipment is too small to accommodate the smallest permissible size of mark  $M_L$ , mark  $M_S$  as described in § 761.45(b), may be used instead of mark  $M_L$ .

(g) Each large low voltage capacitor, each small capacitor normally used in alternating current circuits, and each fluorescent light ballast manufactured ("manufactured", for purposes of this sentence, means built) between July 1, 1978 and July 1, 1998 that do not contain PCBs shall be marked by the manufacturer at the time of manufacture with the statement, "No PCBs". The mark shall be of similar durability and readability as other marking that indicate electrical information, part numbers, or the manufacturer's name. For purposes of this paragraph marking requirement only is applicable to items built domestically or abroad after June 30, 1978.

(h) All marks required by this subpart must be placed in a position on the exterior of the PCB Items or transport vehicles so that the marks can be easily read by any persons inspecting or servicing the marked PCB Items or transport vehicles.

(i) Any chemical substance or mixture that is manufactured after the effective date of this rule and that contains less than 500 ppm PCB (0.05% on a dry weight basis), including PCB that is a byproduct or impurity, must be marked in accordance with any requirements contained in the exemption granted by EPA to permit such manufacture and is not subject to any other requirement in this subpart unless so specified in the exemption. This paragraph applies only to con-

tainers of chemical substances or mixtures. PCB articles and equipment into which the chemical substances or mixtures are processed, are subject to the marking requirements contained elsewhere in this subpart.

(j) As of December 1, 1985, the vault door, machinery room door, fence, hallway, or means of access (other than grates and manhole covers) to a PCB Transformer must be marked with the mark  $M_L$ . The mark must be placed so that it can be easily read by firemen fighting a fire involving this equipment.

[44 FR 31542, May 31, 1979. Redesignated at 47 FR 19527, May 6, 1982, and amended at 47 FR 37359, Aug. 25, 1982; 50 FR 29201, July 17, 1985; 50 FR 32176, Aug. 9, 1985]

#### § 761.45 Marking formats.

The following formats shall be used for marking:

(a) *Large PCB Mark— $M_L$* . Mark  $M_L$  shall be as shown in Figure 1, letters and striping on a white or yellow background and shall be sufficiently durable to equal or exceed the life (including storage for disposal) of the PCB Article, PCB Equipment, or PCB Container. The size of the mark shall be at least 15.25 cm (6 inches) on each side. If the PCB Article or PCB Equipment is too small to accommodate this size, the mark may be reduced in size proportionately down to a minimum of 5 cm (2 inches) on each side.

(b) *Small PCB Mark— $M_s$* . Mark  $M_s$  shall be as shown in Figure 2, letters and striping on a white or yellow background, and shall be sufficiently durable to equal or exceed the life (including storage for disposal) of the PCB Article, PCB Equipment, or PCB Container. The mark shall be a rectangle 2.5 by 5 cm (1 inch by 2 inches). If the PCB Article or PCB Equipment is too small to accommodate this size, the

mark may be reduced in size proportionately down to a minimum of 1 by 2 cm (.4 by .8 inches).

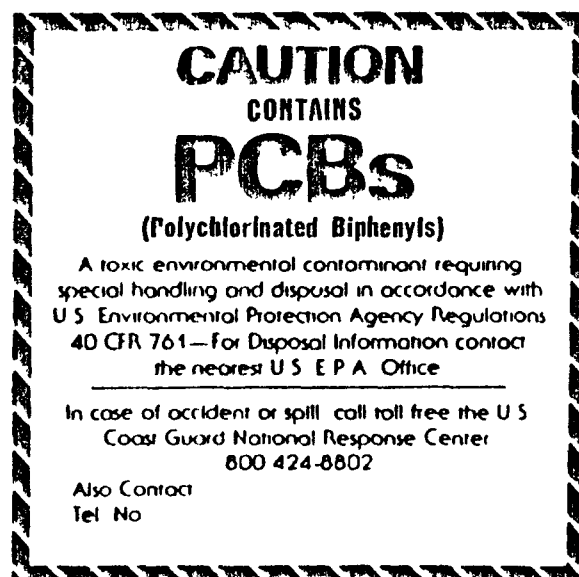


Figure 1

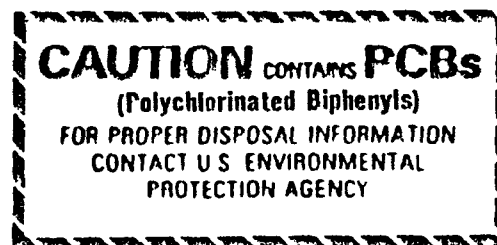


Figure 2

[44 FR 31542, May 31, 1979. Redesignated at 47 FR 19527, May 6, 1982]

#### Subpart D—Storage and Disposal

NOTE: This subpart does not require removal of PCBs and PCB Items from service and disposal earlier than would normally be the case. However, when PCBs and PCB Items are removed from service and disposed of, disposal must be undertaken in accordance with these regulations. PCBs (including soils and debris) and PCB Items

which have been placed in a disposal site are considered to be "in service" for purposes of the applicability of this subpart. This subpart does not require PCBs and PCB Items landfilled prior to February 17, 1978 to be removed for disposal. However, if such PCBs or PCB Items are removed from the disposal site, they must be disposed of in accordance with this subpart. Other subparts are directed to the manufacture, processing, distribution in commerce, and use of PCBs and may result in some cases in disposal at an earlier date than would otherwise occur.

#### § 761.60 Disposal requirements.

(a) *PCBs.* (1) Except as provided in paragraphs (a)(2), (3), (4), and (5) of this section, PCBs at concentrations of 50 ppm or greater must be disposed of in an incinerator which complies with § 761.70.

(2) Mineral oil dielectric fluid from PCB-Contaminated Electrical Equipment containing a PCB concentration of 50 ppm or greater, but less than 500 ppm, must be disposed of in one of the following:

(i) In an incinerator that complies with § 761.70;

(ii) In a chemical waste landfill that complies with § 761.75 if information is provided to the owner or operator of the chemical waste landfill that shows that the mineral oil dielectric fluid does not exceed 500 ppm PCB and is not an ignitable waste as described in § 761.75(b)(8)(iii);

(iii) In a high efficiency boiler provided that:

(A) The boiler complies with the following criteria:

(1) The boiler is rated at a minimum of 50 million BTU hours;

(2) If the boiler uses natural gas or oil as the primary fuel, the carbon monoxide concentration in the stack is 50 ppm or less and the excess oxygen is at least three (3) percent when PCBs are being burned;

(3) If the boiler uses coal as the primary fuel, the carbon monoxide concentration in the stack is 100 ppm or less and the excess oxygen is at least three (3) percent when PCBs are being burned;

(4) The mineral oil dielectric fluid does not comprise more than ten (10) percent (on a volume basis) of the total fuel feed rate;

(5) The mineral oil dielectric fluid is not fed into the boiler unless the

boiler is operating at its normal operating temperature (this prohibits feeding these fluids during either start up or shut down operations);

(6) The owner or operator of the boiler:

(i) Continuously monitors and records the carbon monoxide concentration and excess oxygen percentage in the stack gas while burning mineral oil dielectric fluid; or

(ii) If the boiler will burn less than 30,000 gallons of mineral oil dielectric fluid per year, measures and records the carbon monoxide concentration and excess oxygen percentage in the stack gas at regular intervals of no longer than 60 minutes while burning mineral oil dielectric fluid.

(7) The primary fuel feed rates, mineral oil dielectric fluid feed rates, and total quantities of both primary fuel and mineral oil dielectric fluid fed to the boiler are measured and recorded at regular intervals of no longer than 15 minutes while burning mineral oil dielectric fluid.

(8) The carbon monoxide concentration and the excess oxygen percentage are checked at least once every hour that mineral oil dielectric fluid is burned. If either measurement falls below the levels specified in this rule, the flow of mineral oil dielectric fluid to the boiler shall be stopped immediately.

(B) Thirty days before any person burns mineral oil dielectric fluid in the boiler, the person gives written notice to the EPA Regional Administrator for the EPA Region in which the boiler is located and that the notice contains the following information:

(1) The name and address of the owner or operator of the boiler and the address of the boiler;

(2) The boiler rating in units of BTU/hour;

(3) The carbon monoxide concentration and the excess oxygen percentage in the stack of the boiler when it is operated in a manner similar to the manner in which it will be operated when mineral oil dielectric fluid is burned; and

(4) The type of equipment, apparatus, and procedures to be used to control the feed of mineral oil dielectric fluid to the boiler and to monitor and

record the carbon monoxide concentration and excess oxygen percentage in the stack.

(C) When burning mineral oil dielectric fluid, the boiler must operate at a level of output no less than the output at which the measurements required under paragraph (b)(2)(iii)(B)(3) of this section were taken.

(D) Any person burning mineral oil dielectric fluid in a boiler obtains the following information and retains the information for five years at the boiler location:

(1) The data required to be collected under paragraphs (a)(2)(A) (6) and (7) of this section; and

(2) The quantity of mineral oil dielectric fluid burned in the boiler each month;

(iv) In a facility that is approved in accordance with § 761.60(e). For the purpose of burning mineral oil dielectric fluid, an applicant under § 761.60(e) must show that his combustion process destroys PCBs as efficiently as does a high efficiency boiler, as defined in paragraph (b)(2)(iii) of this section, or a § 761.70 approved incinerator.

(3) Liquids, other than mineral oil dielectric fluid, containing a PCB concentration of 50 ppm or greater, but less than 500 ppm, shall be disposed of:

(i) In an incinerator which complies with § 761.70;

(ii) In a chemical waste landfill which complies with § 761.75 if information is provided to the owner or operator of the chemical waste landfill that shows that the waste does not exceed 500 ppm PCB and is not an ignitable waste as described in § 761.75(b)(8)(iii);

(iii) In a high efficiency boiler provided that.

(A) The boiler complies with the following criteria:

(1) The boiler is rated at a minimum of 50 million BTU/hour;

(2) If the boiler uses natural gas or oil as the primary fuel, the carbon monoxide concentration in the stack is 50 ppm or less and the excess oxygen is at least three (3) percent when PCBs are being burned;

(3) If the boiler uses coal as the primary fuel, the carbon monoxide con-

centration in the stack is 100 ppm or less and the excess oxygen is at least three (3) percent when PCBs are being burned;

(4) The waste does not comprise more than ten (10) percent (on a volume basis) of the total fuel feed rate;

(5) The waste is not fed into the boiler unless the boiler is operating at its normal operating temperature (this prohibits feeding these fluids during either start up or shut down operations);

(6) The owner or operator of the boiler must:

(i) Continuously monitor and record the carbon monoxide concentration and excess oxygen percentage in the stack gas while burning waste fluid; or

(ii) If the boiler will burn less than 30,000 gallons of waste fluid per year, measure and record the carbon monoxide concentration and excess oxygen percentage in the stack gas at regular intervals of no longer than 60 minutes while burning waste fluid;

(7) The primary fuel feed rate, waste fluid feed rate, and total quantities of both primary fuel and waste fluid fed to the boiler must be measured and recorded at regular intervals of no longer than 15 minutes while burning waste fluid; and

(8) The carbon monoxide concentration and the excess oxygen percentage must be checked at least once every hour that the waste is burned. If either measurement falls below the levels specified in this rule, the flow of waste to the boiler shall be stopped immediately.

(B) Prior to any person burning these liquids in the boiler, approval must be obtained from the EPA Regional Administrator for the EPA Region in which the boiler is located and any persons seeking such approval must submit to the EPA Regional Administrator a request containing at least the following information:

(1) The name and address of the owner or operator of the boiler and the address of the boiler;

(2) The boiler rating in units of BTU/hour;

(3) The carbon monoxide concentration and the excess oxygen percentage in the stack of the boiler when it is op-

erated in a manner similar to the manner in which it will be operated when low concentration PCB liquid is burned;

(4) The type of equipment, apparatus, and procedures to be used to control the feed of mineral oil dielectric fluid to the boiler and to monitor and record the carbon monoxide concentration and excess oxygen percentage in the stack;

(5) The type of waste to be burned (e.g., hydraulic fluid, contaminated fuel oil, heat transfer fluid, etc.);

(6) The concentration of PCBs and of any other chlorinated hydrocarbon in the waste and the results of analyses using the American Society of Testing and Materials (ASTM) methods as follows: Carbon and hydrogen content using ASTM D-3178-73 (reapproved 1979), nitrogen content using ASTM E-258-67, sulfur content using ASTM D-2784-80, D-1266-80, or D-129-64, chlorine content using ASTM D-808-81, water and sediment content using either ASTM D-2709-68 or D-1796-83, ash content using D-482-80, calorific value using ASTM D-240-76 (reapproved 1980), carbon residue using either ASTM D-2158-80 or D-524-81, and flash point using ASTM D-93-80.

(7) The quantity of wastes estimated to be burned in a thirty (30) day period;

(8) An explanation of the procedures to be followed to insure that burning the waste will not adversely affect the operation of the boiler such that combustion efficiency will decrease.

(C) On the basis of the information in paragraph (a)(3)(iii)(B) of this section and any other available information, the Regional Administrator may, at his discretion, find that the alternate disposal method will not present an unreasonable risk of injury to health or the environment and approve the use of the boiler;

(D) When burning PCB wastes, the boiler must operate at a level of output no less than the output at which the measurements required under paragraph (a)(3)(iii)(B)(3) of this section were taken; and

(E) Any person burning liquids in boilers approved as provided in paragraph (a)(3)(iii)(C) of this section,

must obtain the following information and retain the information for five years at the boiler location:

(1) The data required to be collected in paragraphs (a)(3)(iii)(A) (6) and (7) of this section;

(2) The quantity of low concentration PCB liquid burned in the boiler each month.

(3) The analysis of the waste required by paragraph (a)(3)(iii)(B)(6) of this section taken once a month for each month during which low concentration PCB liquid is burned in the boiler.

(iv) In a facility that is approved in accordance with § 761.60(e). For the purpose of burning liquids, other than mineral oil dielectric fluid, containing 50 ppm or greater PCB, but less than 500 ppm PCB, an applicant under § 761.60(e) must show that his combustion process destroys PCBs as efficiently as does a high efficiency boiler, as defined in § 761.60(a)(2)(iii), or a § 761.70 incinerator.

(4) Any non-liquid PCBs at concentrations of 50 ppm or greater in the form of contaminated soil, rags, or other debris shall be disposed of:

(i) In an incinerator which complies with § 761.70; or

(ii) In a chemical waste landfill which complies with § 761.75.

NOTE: Except as provided in § 761.75(b)(8)(ii), liquid PCBs shall not be processed into non-liquid forms to circumvent the high temperature incineration requirements of § 761.60(a).

(5) All dredged materials and municipal sewage treatment sludges that contain PCBs at concentrations of 50 ppm or greater shall be disposed of:

(i) In an incinerator which complies with § 761.70,

(ii) In a chemical waste landfill which complies with § 761.65; or

(iii) Upon application, using a disposal method to be approved by the Agency's Regional Administrator in the EPA Region in which the PCBs are located. Applications for disposal in a manner other than prescribed in (i) or (ii) of this section must be made in writing to the Regional Administrator. The application must contain information that, based on technical, environmental, and economic considerations,

indicates that disposal in an incinerator or chemical waste landfill is not reasonable and appropriate, and that the alternate disposal method will provide adequate protection to health and the environment. The Regional Administrator may request other information that he or she believes to be necessary for evaluation of the alternate disposal method. Any approval by the Regional Administrator shall be in writing and may contain any appropriate limitations on the approved alternate method for disposal. In addition to these regulations, the Regional Administrator shall consider other applicable Agency guidelines, criteria, and regulations to ensure that the discharges of dredged material and sludges that contain PCBs and other contaminants are adequately controlled to protect the environment. The person to whom such approval is issued must comply with all limitations contained in the approval.

(6) When storage is desired prior to disposal, PCBs at concentrations of 50 ppm or greater shall be stored in a facility which complies with § 761.65.

(b) *PCB Articles*—(1) *Transformers*. (i) PCB Transformers shall be disposed of in accordance with either of the following:

(A) In an incinerator that complies with § 761.70; or

(B) In a chemical waste landfill which complies with § 761.75; *Provided*, That the transformer is first drained of all free flowing liquid, filled with solvent, allowed to stand for at least 18 hours, and then drained thoroughly. PCB liquids that are removed shall be disposed of in accordance with paragraph (a) of this section. Solvents may include kerosene, xylene, toluene and other solvents in which PCBs are readily soluble. Precautionary measures should be taken, however, that the solvent flushing procedure is conducted in accordance with applicable safety and health standards as required by Federal or State regulations.

(ii) [Reserved]

(2) *PCB Capacitors*. (i) The disposal of any capacitor shall comply with all requirements of this subpart unless it is known from label or nameplate information, manufacturer's literature (including documented communica-

tions with the manufacturer), or chemical analysis that the capacitor does not contain PCBs.

(ii) Any person may dispose of PCB Small Capacitors as municipal solid waste, unless that person is subject to the requirements of paragraph (b)(2)(iv) of this section.

(iii) Any PCB Large High or Low Voltage Capacitor which contains 500 ppm or greater PCBs, owned by any person, shall be disposed of in accordance with either of the following:

(A) Disposal in an incinerator that complies with § 761.70; or

(B) Until March 1, 1981, disposal in a chemical waste landfill that complies with § 761.75.

(iv) Any PCB Small Capacitor owned by any person who manufactures or at any time manufactured PCB Capacitors or PCB Equipment and acquired the PCB Capacitors in the course of such manufacturing shall be disposed of in accordance with either of the following:

(A) Disposal in an incinerator which complies with § 761.70; or

(B) Until March 1, 1981, disposal in a chemical waste landfill which complies with § 761.75.

(v) Notwithstanding the restrictions imposed by paragraph (b)(2)(iii)(B) or (b)(2)(iv)(B) of this section, PCB capacitors may be disposed of in PCB chemical waste landfills that comply with § 761.75 subsequent to March 1, 1981, if the Assistant Administrator for Pesticides and Toxic Substances publishes a notice in the FEDERAL REGISTER declaring that those landfills are available for such disposal and explaining the reasons for the extension or reopening. An extension or reopening for disposal of PCB capacitors that is granted under this subsection shall be subject to such terms and conditions as the Assistant Administrator may prescribe and shall be in effect for such period as the Assistant Administrator may prescribe. The Assistant Administrator may permit disposal of PCB capacitors in EPA approved chemical waste landfills after March 1, 1981, if in his opinion,

(A) Adequate incineration capability for PCB capacitors is not available, or

(B) The incineration of PCB capacitors will significantly interfere with the incineration of liquid PCBs, or

(C) There is other good cause shown.

As part of this evaluation, the Assistant Administrator will consider the impact of his action on the incentives to construct or expand PCB incinerators.

(vi) Prior to disposal in a § 761.75 chemical waste landfill, all large PCB capacitors, and all small PCB capacitors described in paragraph (b)(2)(iv) of this section, shall be placed in one of the Department of Transportation specification containers identified in § 761.65(c)(6) or in containers that comply with 49 CFR 178.118 (specification 17H containers). Large PCB capacitors which are too big to fit inside one of these containers shall be placed in a container with strength and durability equivalent to the DOT specification containers. In all cases, interstitial space in the container shall be filled with sufficient absorbent material (such as sawdust or soil) to absorb any liquid PCBs remaining in the capacitors.

(3) *PCB hydraulic machines.* PCB hydraulic machines containing PCBs at concentrations of 50 ppm or greater such as die casting machines may be disposed of as municipal solid waste or salvage provided that the machines are drained of all free-flowing liquid and the liquid is disposed of in accordance with the provisions of paragraph (a) of this section. If the PCB liquid contains 1000 ppm PCB or greater, then the hydraulic machine must be flushed prior to disposal with a solvent containing less than 50 ppm PCB under transformer solvents at paragraph (b)(1)(i)(B) of this section and the solvent disposed of in accordance with paragraph (a) of this section.

(4) *PCB-Contaminated Electrical Equipment.* All PCB-Contaminated Electrical Equipment except capacitors shall be disposed of by draining all free flowing liquid from the electrical equipment and disposing of the liquid in accordance with paragraph (a)(2) or (3) of this section. The disposal of the drained electrical equipment is not regulated by this rule. Capacitors that contain between 50 and 500 ppm PCBs shall be disposed of in an

incinerator that complies with § 761.70 or in a chemical waste landfill that complies with § 761.75.

(5) *Other PCB Articles.* (i) PCB articles with concentrations at 50 ppm or greater must be disposed of:

(A) In an incinerator that complies with § 761.70; or

(B) In a chemical waste landfill that complies with § 761.75, provided that all free-flowing liquid PCBs have been thoroughly drained from any articles before the articles are placed in the chemical waste landfill and that the drained liquids are disposed of in an incinerator that complies with § 761.70.

(ii) PCB Articles with a PCB concentration between 50 and 500 ppm must be disposed of by draining all free flowing liquid from the article and disposing of the liquid in accordance with paragraph (a)(2) or (3) of this section. The disposal of the drained article is not regulated by this rule.

(6) *Storage of PCB Articles.* Except for a PCB Article described in paragraph (b)(2)(ii) of this section and hydraulic machines that comply with the municipal solid waste disposal provisions described in paragraph (b)(3) of this section, any PCB Article, with PCB concentrations at 50 ppm or greater, shall be stored in accordance with § 761.65 prior to disposal.

(c) *PCB Containers.* (1) Unless decontaminated in compliance with § 761.79 or as provided in paragraph (c)(2) of this section, a PCB container with PCB concentrations at 50 ppm or greater shall be disposed of:

(i) In an incinerator which complies with § 761.70, or

(ii) In a chemical waste landfill that complies with § 761.75; provided that if there are PCBs in a liquid state, the PCB Container shall first be drained and the PCB liquid disposed of in accordance with paragraph (a) of this section.

(2) Any PCB Container used to contain only PCBs at a concentration less than 500 ppm shall be disposed of as municipal solid wastes; provided that if the PCBs are in a liquid state, the PCB Container shall first be drained and the PCB liquid shall be disposed of in accordance with paragraph (a) of this section.

(3) Prior to disposal, a PCB container with PCB concentrations at 50 ppm or greater shall be stored in a facility which complies with § 761.65.

(d) *Spills.* (1) Spills and other uncontrolled discharges of PCBs at concentrations of 50 ppm or greater constitute the disposal of PCBs.

(2) PCBs resulting from the clean-up and removal of spills, leaks, or other uncontrolled discharges, must be stored and disposed of in accordance with paragraph (a) of this section.

(3) These regulations do not exempt any person from any actions or liability under other statutory authorities, including but not limited to the Clean Water Act, the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

(e) Any person who is required to incinerate any PCBs and PCB Items under this subpart and who can demonstrate that an alternative method of destroying PCBs and PCB Items exists and that this alternative method can achieve a level of performance equivalent to § 761.70 incinerators or high efficiency boilers as provided in paragraph (a)(2)(iv) and (a)(3)(iv) of this section, may submit a written request to either the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances for an exemption from the incineration requirements of § 761.70 or § 761.60. Requests for approval of alternate methods that will be operated in more than one region must be submitted to the Assistant Administrator for Pesticides and Toxic Substances except for research and development involving less than 500 pounds of PCB material (see paragraph (i)(2) of this section). Requests for approval of alternate methods that will be operated in only one region must be submitted to the appropriate Regional Administrator. The applicant must show that his method of destroying PCBs will not present an unreasonable risk of injury to health or the environment. On the basis of such information and any available information, the Regional Administrator or Assistant Administrator for Pesticides and Toxic Substances may, in his discretion, approve the use of the al-

ternate method if he finds that the alternate disposal method provides PCB destruction equivalent to disposal in a § 761.70 incinerator or a § 761.60 high efficiency boiler and will not present an unreasonable risk of injury to health or the environment. Any approval must be stated in writing and may contain such conditions and provisions as the Regional Administrator or Assistant Administrator for Pesticides and Toxic Substances deems appropriate. The person to whom such waiver is issued must comply with all limitations contained in such determination.

(f)(1) Each operator of a chemical waste landfill, incinerator, or alternative to incineration approved under paragraph (e) of this section shall give the following written notices to the state and local governments within whose jurisdiction the disposal facility is located:

(i) Notice at least thirty (30) days before a facility is first used for disposal of PCBs required by these regulations; and

(ii) At the request of any state or local government, annual notice of the quantities and general description of PCBs disposed of during the year. This annual notice shall be given no more than thirty (30) days after the end of the year covered.

(iii) The Regional Administrator may reduce the notice period required by paragraph (f)(1)(i) of this section from thirty days to a period of no less than five days in order to expedite interim approval of the chemical waste landfill located in Sedgwick County, Kansas.

(2) Any person who disposes of PCBs under a paragraph (a)(5)(iii) of this section incineration or chemical waste landfilling waiver shall give written notice at least thirty (30) days prior to conducting the disposal activities to the state and local governments within whose jurisdiction the disposal is to take place.

(g) *Testing procedures.* (1) Owners or users of mineral oil dielectric fluid electrical equipment may use the following procedures to determine the concentration of PCBs in the dielectric fluid:

(i) Dielectric fluid removed from mineral oil dielectric fluid electrical equipment may be collected in a common container, provided that no other chemical substances or mixtures are added to the container. This common container option does not permit dilution of the collected oil. Mineral oil that is assumed or known to contain at least 50 ppm PCBs must not be mixed with mineral oil that is known or assumed to contain less than 50 ppm PCBs to reduce the concentration of PCBs in the common container. If dielectric fluid from untested, oil-filled circuit breakers, reclosers, or cable is collected in a common container with dielectric fluid from other oil-filled electrical equipment, the entire contents of the container must be treated as PCBs at a concentration of at least 50 ppm, unless all of the fluid from the other oil-filled electrical equipment has been tested and shown to contain less than 50 ppm PCBs.

(ii) For purposes of complying with the marking and disposal requirements, representative samples may be taken from either the common containers or the individual electrical equipment to determine the PCB concentration, except that if any PCBs at a concentration of 500 ppm or greater have been added to the container or equipment then the total container contents must be considered as having a PCB concentration of 500 ppm or greater for purposes of complying with the disposal requirements of this subpart. For purposes of this subparagraph, representative samples of mineral oil dielectric fluid are either samples taken in accordance with American Society of Testing and Materials method D-923 or samples taken from a container that has been thoroughly mixed in a manner such that any PCBs in the container are uniformly distributed throughout the liquid in the container.

(2) Owners or users of waste oil may use the following procedures to determine the PCB concentration of waste oil:

(i) Waste oil from more than one source may be collected in a common container, provided that no other chemical substances or mixtures, such

as non-waste oils, are added to the container.

(ii) For purposes of complying with the marking and disposal requirements, representative samples may be taken from either the common containers or the individual electrical equipment to determine the PCB concentration. *Except*, That if any PCBs at a concentration of 500 ppm or greater have been added to the container or equipment then the total container contents must be considered as having a PCB concentration of 500 ppm or greater for purposes of complying with the disposal requirements of this Subpart. For purposes of this paragraph, representative samples of mineral oil dielectric fluid are either samples taken in accordance with American Society of Testing and Materials method D-923-81 or samples taken from a container that has been thoroughly mixed in a manner such that any PCBs in the container are uniformly distributed throughout the liquid in the container.

(h) Requirements for export and import of PCBs for purposes of disposal and PCB Items for purposes of disposal are found in § 761.20.

(i) *Approval authority for disposal methods.* (1) The officials (the Assistant Administrator for Pesticides and Toxic Substances and the Regional Administrators) designated in §§ 761.60(e) and 761.70(a) and (b) to receive requests for approval of PCB disposal activities are the primary approval authorities for these activities. Notwithstanding, the Assistant Administrator for Pesticides and Toxic Substances may, at his/her discretion, assign the authority to review and approve any aspect of a disposal system to the Office of Pesticides and Toxic Substances or to a Regional Administrator.

(2) Except for activity authorized under § 761.30(j), research and development (R and D) into PCB disposal methods using a total of less than 500 pounds of PCB material (regardless of PCB concentration) will be reviewed and approved by the appropriate EPA Regional Administrator and research and development using 500 pounds or more of PCB material (regardless of PCB concentration) will be reviewed

by the approval authorities set out in §§ 761.60(e) and 761.70(a) and (b).

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605))

[44 FR 31542, May 31, 1979, as amended at 44 FR 54297, Sept. 19, 1979; 45 FR 20475, Mar. 28, 1980. Redesignated at 47 FR 19527, May 6, 1982, and amended at 47 FR 37359, Aug. 25, 1982; 48 FR 5730, Feb. 8, 1983; 48 FR 13185, Mar. 30, 1983; 48 FR 15125, Apr. 7, 1983; 49 FR 28191, July 10, 1984; 49 FR 36648, Sept. 19, 1984]

**§ 761.65 Storage for disposal.**

This section applies to the storage for disposal of PCBs at concentrations of 50 ppm or greater and PCB Items with PCB concentrations of 50 ppm or greater.

(a) Any PCB Article or PCB Container stored for disposal before January 1, 1983, shall be removed from storage and disposed of as required by this part before January 1, 1984. Any PCB Article or PCB Container stored for disposal after January 1, 1983, shall be removed from storage and disposed of as required by Subpart D of this part within one year from the date when it was first placed into storage.

(b) Except as provided in paragraph (c) of this section, after July 1, 1978, owners or operators of any facilities used for the storage of PCBs and PCB Items designated for disposal shall comply with the following requirements:

(1) The facilities shall meet the following criteria:

(i) Adequate roof and walls to prevent rain water from reaching the stored PCBs and PCB Items;

(ii) An adequate floor which has continuous curbing with a minimum six inch high curb. The floor and curbing must provide a containment volume equal to at least two times the internal volume of the largest PCB Article or PCB Container stored therein or 25 percent of the total internal volume of all PCB Articles or PCB Containers stored therein, whichever is greater;

(iii) No drain valves, floor drains, expansion joints, sewer lines, or other openings that would permit liquids to flow from the curbed area;

(iv) Floors and curbing constructed of continuous smooth and impervious

materials, such as Portland cement concrete or steel, to prevent or minimize penetration of PCBs; and

(v) Not located at a site that is below the 100-year flood water elevation.

(c)(1) The following PCB Items may be stored temporarily in an area that does not comply with the requirements of paragraph (b) of this section for up to thirty days from the date of their removal from service, provided that a notation is attached to the PCB Item or a PCB Container (containing the item) indicating the date the item was removed from service:

(i) Non-leaking PCB Articles and PCB Equipment;

(ii) Leaking PCB Articles and PCB Equipment if the PCB Items are placed in a non-leaking PCB Container that contains sufficient sorbent materials to absorb any liquid PCBs remaining in the PCB Items;

(iii) PCB Containers containing non-liquid PCBs such as contaminated soil, rags, and debris; and

(iv) PCB Containers containing liquid PCBs at a concentration between 50 and 500 ppm, provided a Spill Prevention, Control and Countermeasure Plan has been prepared for the temporary storage area in accordance with 40 CFR Part 112. In addition, each container must bear a notation that indicates that the liquids in the drum do not exceed 500 ppm PCB.

(2) Non-leaking and structurally undamaged PCB Large High Voltage Capacitors and PCB-Contaminated Electrical Equipment that have not been drained of free flowing dielectric fluid may be stored on pallets next to a storage facility that meets the requirements of paragraph (b) of this section. PCB-Contaminated Electrical Equipment that has been drained of free flowing dielectric fluid is not subject to the storage provisions of § 761.65. Storage under this subparagraph will be permitted only when the storage facility has immediately available unfilled storage space equal to 10 percent of the volume of capacitors and equipment stored outside the facility. The capacitors and equipment temporarily stored outside the facility shall be checked for leaks weekly.

(3) Any storage area subject to the requirements of paragraph (b) or para-

graph (c)(1) of this section shall be marked as required in Subpart C—§ 761.40(a)(10).

(4) No item of movable equipment that is used for handling PCBs and PCB Items in the storage facilities and that comes in direct contact with PCBs shall be removed from the storage facility area unless it has been decontaminated as specified in § 761.79.

(5) All PCB Articles and PCB Containers in storage shall be checked for leaks at least once every 30 days. Any leaking PCB Articles and PCB Containers and their contents shall be transferred immediately to properly marked non-leaking containers. Any spilled or leaked materials shall be immediately cleaned up, using sorbents or other adequate means, and the PCB-contaminated materials and residues shall be disposed of in accordance with § 761.60(a)(4).

(6) Except as provided in paragraph (c)(7) of this section, any container used for the storage of liquid PCBs shall comply with the Shipping Container Specification of the Department of Transportation (DOT), 49 CFR 178.80 (Specification 5 container without removable head), 178.82 (Specification 5B container without removable head), 178.102 (Specification 6D overpack with Specification 2S (§ 178.35) or 2SL (§ 178.35a) polyethylene containers) or 178.116 (Specification 17E container). Any container used for the storage of non-liquid PCBs shall comply with the specifications of 49 CFR 178.80 (Specification 5 container), 178.82 (Specification 5B container) or 178.115 (Specification 17C container). As an alternate, containers larger than those specified in DOT Specifications 5, 5B, or 17C may be used for non-liquid PCBs if the containers are designed and constructed in a manner that will provide as much protection against leaking and exposure to the environment as the DOT Specification containers, and are of the same relative strength and durability as the DOT Specification containers.

(7) Storage containers for liquid PCBs can be larger than the containers specified in paragraph (c)(6) of this section provided that:

(i) The containers are designed, constructed, and operated in compliance with Occupational Safety and Health Standards, 29 CFR 1910.106, *Flammable and combustible liquids*. Before using these containers for storing PCBs, the design of the containers must be reviewed to determine the effect on the structural safety of the containers that will result from placing liquids with the specific gravity of PCBs into the containers (see 29 CFR 1910.106(b)(1)(i)(j)).

(ii) The owners or operators of any facility using containers described in paragraph (c)(7)(i) of this section shall prepare and implement a Spill Prevention Control and Countermeasure (SPCC) Plan as described in Part 112 of this title. In complying with 40 CFR Part 112, the owner or operator shall read "oil(s)" as "PCB(s)" whenever it appears. The exemptions for storage capacity, 40 CFR 112.1(d)(2), and the amendment of SPCC plans by the Regional Administrator, 40 CFR 112.4, shall not apply unless some fraction of the liquids stored in the container are oils as defined by section 311 of the Clean Water Act.

(8) PCB Articles and PCB Containers shall be dated on the article or container when they are placed in storage. The storage shall be managed so that the PCB Articles and PCB Containers can be located by the date they entered storage. Storage containers provided in paragraph (c)(7) of this section shall have a record that includes for each batch of PCBs the quantity of the batch and date the batch was added to the container. The record shall also include the date, quantity, and disposition of any batch of PCBs removed from the container.

(9) Owners or operators of storage facilities shall establish and maintain records as provided in § 761.80.

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605)

[44 FR 31542, May 31, 1979. Redesignated at 47 FR 19527, May 6, 1982, and amended at 47 FR 37359, Aug. 8, 1982; 49 FR 28191, July 10, 1984]

## § 761.70 Incineration.

This section applies to facilities used to incinerate PCBs required to be incinerated by this part.

(a) *Liquid PCBs.* An incinerator used for incinerating PCBs shall be approved by an EPA Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances pursuant to paragraph (d) of this section. Requests for approval of incinerators to be used in more than one region must be submitted to the Assistant Administrator for Pesticides and Toxic Substances, except for research and development involving less than 500 pounds of PCB material (see § 761.60(i)(2)). Requests for approval of incinerators to be used in only one region must be submitted to the appropriate Regional Administrator. The incinerator shall meet all of the requirements specified in paragraph (a)(1) through (9) of this section, unless a waiver from these requirements is obtained pursuant to paragraph (d)(5) of this section. In addition, the incinerator shall meet any other requirements which may be prescribed pursuant to paragraph (d)(4) of this section.

(1) Combustion criteria shall be either of the following:

(i) Maintenance of the introduced liquids for a 2-second dwell time at 1200°C(±100°C) and 3 percent excess oxygen in the stack gas; or

(ii) Maintenance of the introduced liquids for a 1½ second dwell time at 1600°C(±100°C) and 2 percent excess oxygen in the stack gas.

(2) Combustion efficiency shall be at least 99.9 percent computed as follows:

$$\text{Combustion efficiency} = \frac{\text{Cco}_2}{\text{Cco}_2 + \text{Cco}} \times 100$$

where

Cco<sub>2</sub> = Concentration of carbon dioxide.

Cco = Concentration of carbon monoxide.

(3) The rate and quantity of PCBs which are fed to the combustion system shall be measured and recorded at regular intervals of no longer than 15 minutes.

(4) The temperatures of the incineration process shall be continuously measured and recorded. The combustion temperature of the incineration process shall be based on either direct

(pyrometer) or indirect (wall thermocouple-pyrometer correlation) temperature readings.

(5) The flow of PCBs to the incinerator shall stop automatically whenever the combustion temperature drops below the temperatures specified in paragraph (a)(1) of this section.

(6) Monitoring of stack emission products shall be conducted:

(i) When an incinerator is first used for the disposal of PCBs under the provisions of this regulation;

(ii) When an incinerator is first used for the disposal of PCBs after the incinerator has been modified in a manner which may affect the characteristics of the stack emission products; and

(iii) At a minimum such monitoring shall be conducted for the following parameters: (a) O<sub>2</sub>; (b) CO; (c) CO<sub>2</sub>; (d) Oxides of Nitrogen (NO<sub>x</sub>); (e) Hydrochloric Acid (HCl); (f) Total Chlorinated Organic Content (RCl); (g) PCBs; and (h) Total Particulate Matter.

(7) At a minimum monitoring and recording of combustion products and incineration operations shall be conducted for the following parameters whenever the incinerator is incinerating PCBs: (i) O<sub>2</sub>; (ii) CO; and (iii) CO<sub>2</sub>. The monitoring for O<sub>2</sub> and CO shall be continuous. The monitoring for CO<sub>2</sub> shall be periodic, at a frequency specified by the Regional Administrator or Assistant Administrator for Pesticides and Toxic Substances.

(8) The flow of PCBs to the incinerator shall stop automatically when any one or more of the following conditions occur, unless a contingency plan is submitted by the incinerator owner or operator and approved by the Regional Administrator or Assistant Administrator for Pesticides and Toxic Substances. The contingency plan indicates what alternative measures the incinerator owner or operator would take if any of the following conditions occur:

(i) Failure of monitoring operations specified in paragraph (a)(7) of this section;

(ii) Failure of the PCB rate and quantity measuring and recording equipment specified in paragraph (a)(3) of this section; or

(iii) Excess oxygen falls below the percentage specified in paragraph (a)(1) of this section.

(9) Water scrubbers shall be used for HCl control during PCB incineration and shall meet any performance requirements specified by the appropriate EPA Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances. Scrubber effluent shall be monitored and shall comply with applicable effluent or pretreatment standards, and any other State and Federal laws and regulations. An alternate method of HCl control may be used if the alternate method has been approved by the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances. (The HCl neutralizing capability of cement kilns is considered to be an alternate method.)

(b) *Nonliquid PCBs.* An incinerator used for incinerating nonliquid PCBs, PCB Articles, PCB Equipment, or PCB Containers shall be approved by the appropriate EPA Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances pursuant to paragraph (d) of this section. Requests for approval of incinerators to be used in more than one region must be submitted to the Assistant Administrator for Pesticides and Toxic Substances, except for research and development involving less than 500 pounds of PCB material (see § 761.60(i)(2)). Requests for approval of incinerators to be used in only one region must be submitted to the appropriate Regional Administrator. The incinerator shall meet all of the requirements specified in paragraphs (b)(1) and (2) of this section unless a waiver from these requirements is obtained pursuant to paragraph (d)(5) of this section. In addition, the incinerator shall meet any other requirements that may be prescribed pursuant to paragraph (d)(4) of this section.

(1) The mass air emissions from the incinerator shall be no greater than 0.001g PCB/kg of the PCB introduced into the incinerator.

(2) The incinerator shall comply with the provisions of paragraphs (a)(2), (3), (4), (6), (7), (8)(i) and (ii), and (9) of this section.

(c) *Maintenance of data and records.* All data and records required by this section shall be maintained in accordance with § 761.80, Records and monitoring.

(d) *Approval of incinerators.* Prior to the incineration of PCBs and PCB Items the owner or operator of an incinerator shall receive the written approval of the Agency Regional Administrator for the region in which the incinerator is located, or the Assistant Administrator for Pesticides and Toxic Substances. Approval from the Assistant Administrator for Pesticides and Toxic Substances may be effective in all ten EPA regions. Such approval shall be obtained in the following manner:

(1) *Application.* The owner or operator shall submit to the Regional Administrator or the Assistant Administrator an application which contains:

- (i) The location of the incinerator;
- (ii) A detailed description of the incinerator including general site plans and design drawings of the incinerator;
- (iii) Engineering reports or other information on the anticipated performance of the incinerator;
- (iv) Sampling and monitoring equipment and facilities available;
- (v) Waste volumes expected to be incinerated;
- (vi) Any local, State, or Federal permits or approvals; and
- (vii) Schedules and plans for complying with the approval requirements of this regulation.

(2) *Trial burn.* (i) Following receipt of the application described in paragraph (d)(1) of this section, the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances shall determine if a trial burn is required and notify the person who submitted the report whether a trial burn of PCBs and PCB Items must be conducted. The Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances may require the submission of any other information that the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances finds to be reasonably necessary to determine the need for a trial burn. Such other information

shall be restricted to the types of information required in paragraphs (d)(1)(i) through (vii) of this section.

(ii) If the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances determines that a trial burn must be held, the person who submitted the report described in paragraph (d)(1) of this section shall submit to the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances a detailed plan for conducting and monitoring the trial burn. At a minimum, the plan must include:

(A) Date trial burn is to be conducted;

(B) Quantity and type of PCBs and PCB Items to be incinerated;

(C) Parameters to be monitored and location of sampling points;

(D) Sampling frequency and methods and schedules for sample analyses; and

(E) Name, address, and qualifications of persons who will review analytical results and other pertinent data, and who will perform a technical evaluation of the effectiveness of the trial burn.

(iii) Following receipt of the plan described in paragraph (d)(2)(ii) of this section, the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances will approve the plan, require additions or modifications to the plan, or disapprove the plan. If the plan is disapproved, the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances will notify the person who submitted the plan of such disapproval, together with the reasons why it is disapproved. That person may thereafter submit a new plan in accordance with paragraph (d)(2)(ii) of this section. If the plan is approved (with any additions or modifications which the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances may prescribe), the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances will notify the person who submitted the plan of the approval. Thereafter, the trial burn shall take place at a date and time to be agreed upon between the Regional Administrator or

the Assistant Administrator for Pesticides and Toxic Substances and the person who submitted the plan.

(3) *Other information.* In addition to the information contained in the report and plan described in paragraphs (d)(1) and (2) of this section, the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances may require the owner or operator to submit any other information that the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances finds to be reasonably necessary to determine whether an incinerator shall be approved.

NOTE: The Regional Administrator will have available for review and inspection an Agency manual containing information on sampling methods and analytical procedures for the parameters required in § 761.70(a) (3), (4), (6), and (7) plus any other parameters he/she may determine to be appropriate. Owners or operators are encouraged to review this manual prior to submitting any report required in § 761.70.

(4) *Contents of approval.* (i) Except as provided in paragraph (d)(5) of this section, the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances may not approve an incinerator for the disposal of PCBs and PCB Items unless he finds that the incinerator meets all of the requirements of paragraphs (a) and/or (b) of this section.

(ii) In addition to the requirements of paragraphs (a) and/or (b) of this section, the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances may include in an approval any other requirements that the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances finds are necessary to ensure that operation of the incinerator does not present an unreasonable risk of injury to health or the environment from PCBs. Such requirements may include a fixed period of time for which the approval is valid.

(5) *Waivers.* An owner or operator of the incinerator may submit evidence to the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances that operation of the incinerator will not present an

unreasonable risk of injury to health or the environment from PCBs, when one or more of the requirements of paragraphs (a) and/or (b) of this section are not met. On the basis of such evidence and any other available information, the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances may in his/her discretion find that any requirement of paragraphs (a) and (b) of this section is not necessary to protect against such a risk, and may waive the requirements in any approval for that incinerator. Any finding and waiver under this paragraph must be stated in writing and included as part of the approval.

(6) *Persons approved.* An approval will designate the persons who own and who are authorized to operate the incinerator, and will apply only to such persons, except as provided in paragraph (d)(8) of this section.

(7) *Final approval.* Approval of an incinerator will be in writing and signed by the Regional Administrator or the Assistant Administrator for Pesticides and Toxic Substances. The approval will state all requirements applicable to the approved incinerator.

(8) *Transfer of property.* Any person who owns or operates an approved incinerator must notify EPA at least 30 days before transferring ownership in the incinerator or the property it stands upon, or transferring the right to operate the incinerator. The transferor must also submit to EPA, at least 30 days before such transfer, a notarized affidavit signed by the transferee which states that the transferee will abide by the transferor's EPA incinerator approval. Within 30 days of receiving such notification and affidavit, EPA will issue an amended approval substituting the transferee's name for the transferor's name, or EPA may require the transferee to apply for a new incinerator approval. In the latter case, the transferee must abide by the transferor's EPA approval until EPA issues the new approval to the transferee.

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605))

[44 FR 31542, May 31, 1979. Redesignated at 47 FR 19527, May 6, 1982, and amended at

48 FR 13185, Mar. 30, 1983; 49 FR 28191, July 10, 1984]

#### § 761.75 Chemical waste landfills.

This section applies to facilities used to dispose of PCBs in accordance with the part.

(a) *General.* A chemical waste landfill used for the disposal of PCBs and PCB Items shall be approved by the Agency Regional Administrator pursuant to paragraph (c) of this section. The landfill shall meet all of the requirements specified in paragraph (b) of this section, unless a waiver from these requirements is obtained pursuant to paragraph (c)(4) of this section. In addition, the landfill shall meet any other requirements that may be prescribed pursuant to paragraph (c)(3) of this section.

(b) *Technical requirements.* Requirements for chemical waste landfills used for the disposal of PCBs and PCB Items are as follows:

(1) *Soils.* The landfill site shall be located in thick, relatively impermeable formations such as large-area clay pans. Where this is not possible, the soil shall have a high clay and silt content with the following parameters:

(i) In-place soil thickness, 4 feet or compacted soil liner thickness, 3 feet;

(ii) Permeability (cm/sec), equal to or less than  $1 \times 10^{-7}$ ;

(iii) Percent soil passing No. 200 Sieve, >30;

(iv) Liquid Limit, >30; and

(v) Plasticity Index >15.

(2) *Synthetic membrane liners.* Synthetic membrane liners shall be used when, in the judgment of the Regional Administrator, the hydrologic or geologic conditions at the landfill require such a liner in order to provide at least a permeability equivalent to the soils in paragraph (b)(1) of this section. Whenever a synthetic liner is used at a landfill site, special precautions shall be taken to insure that its integrity is maintained and that it is chemically compatible with PCBs. Adequate soil underlining and soil cover shall be provided to prevent excessive stress on the liner and to prevent rupture of the liner. The liner must have a minimum thickness of 30 mils.

(3) *Hydrologic conditions.* The bottom of the landfill shall be above

the historical high groundwater table as provided below. Floodplains, shorelands, and groundwater recharge areas shall be avoided. There shall be no hydraulic connection between the site and standing or flowing surface water. The site shall have monitoring wells and leachate collection. The bottom of the landfill liner system or natural in-place soil barrier shall be at least fifty feet from the historical high water table.

(4) *Flood protection.* (i) If the landfill site is below the 100-year floodwater elevation, the operator shall provide surface water diversion dikes around the perimeter of the landfill site with a minimum height equal to two feet above the 100-year floodwater elevation.

(ii) If the landfill site is above the 100-year floodwater elevation, the operators shall provide diversion structures capable of diverting all of the surface water runoff from a 24-hour, 25-year storm.

(5) *Topography.* The landfill site shall be located in an area of low to moderate relief to minimize erosion and to help prevent landslides or slumping.

(6) *Monitoring systems—(i) Water sampling.* (A) For all sites receiving PCBs, the ground and surface water from the disposal site area shall be sampled prior to commencing operations under an approval provided in paragraph (c) of this section for use as baseline data.

(B) Any surface watercourse designated by the Regional Administrator using the authority provided in paragraph (c)(3)(ii) of this section shall be sampled at least monthly when the landfill is being used for disposal operations.

(C) Any surface watercourse designated by the Regional Administrator using the authority provided in paragraph (c)(3)(ii) of this section shall be sampled for a time period specified by the Regional Administrator on a frequency of no less than once every six months after final closure of the disposal area.

(ii) *Groundwater monitor wells.* (A) If underlying earth materials are homogenous, impermeable, and uniformly sloping in one direction, only three

sampling points shall be necessary. These three points shall be equally spaced on a line through the center of the disposal area and extending from the area of highest water table elevation to the area of the lowest water table elevation on the property.

(B) All monitor wells shall be cased and the annular space between the monitor zone (zone of saturation) and the surface shall be completely back-filled with Portland cement or an equivalent material and plugged with Portland cement to effectively prevent percolation of surface water into the well bore. The well opening at the surface shall have a removable cap to provide access and to prevent entrance of rainfall or stormwater runoff. The well shall be pumped to remove the volume of liquid initially contained in the well before obtaining a sample for analysis. The discharge shall be treated to meet applicable State or Federal discharge standards or recycled to the chemical waste landfill.

(iii) *Water analysis.* As a minimum, all samples shall be analyzed for the following parameters, and all data and records of the sampling and analysis shall be maintained as required in § 761.80(d)(1). Sampling methods and analytical procedures for these parameters shall comply with those specified in 40 CFR Part 136 as amended in 41 FR 52779 on December 1, 1976.

(A) PCBs.

(B) pH.

(C) Specific conductance.

(D) Chlorinated organics.

(7) *Leachate collection.* A leachate collection monitoring system shall be installed above the chemical waste landfill. Leachate collection systems shall be monitored monthly for quantity and physicochemical characteristics of leachate produced. The leachate should be either treated to acceptable limits for discharge in accordance with a State or Federal permit or disposed of by another State or Federally approved method. Water analysis shall be conducted as provided in paragraph (b)(6)(iii) of this section. Acceptable leachate monitoring/collection systems shall be any of the following designs, unless a waiver is obtained pursuant to paragraph (c)(4) of this section.

(i) *Simple leachate collection.* This system consists of a gravity flow drainfield installed above the waste disposal facility liner. This design is recommended for use when semi-solid or leachable solid wastes are placed in a lined pit excavated into a relatively thick, unsaturated, homogenous layer of low permeability soil.

(ii) *Compound leachate collection.* This system consists of a gravity flow drainfield installed above the waste disposal facility liner and above a secondary installed liner. This design is recommended for use when semi-liquid or leachable solid wastes are placed in a lined pit excavated into relatively permeable soil.

(iii) *Suction lysimeters.* This system consists of a network of porous ceramic cups connected by hoses/tubing to a vacuum pump. The porous ceramic cups or suction lysimeters are installed along the sides and under the bottom of the waste disposal facility liner. This type of system works best when installed in a relatively permeable unsaturated soil immediately adjacent to the bottom and/or sides of the disposal facility.

(8) *Chemical waste landfill operations.* (i) PCBs and PCB Items shall be placed in a landfill in a manner that will prevent damage to containers or articles. Other wastes placed in the landfill that are not chemically compatible with PCBs and PCB Items including organic solvents shall be segregated from the PCBs throughout the waste handling and disposal process.

(ii) An operation plan shall be developed and submitted to the Regional Administrator for approval as required in paragraph (c) of this section. This plan shall include detailed explanations of the procedures to be used for recordkeeping, surface water handling procedures, excavation and backfilling, waste segregation burial coordinates, vehicle and equipment movement, use of roadways, leachate collection systems, sampling and monitoring procedures, monitoring wells, environmental emergency contingency plans, and security measures to protect against vandalism and unauthorized waste placements. EPA guidelines entitled "Thermal Processing and Land Disposal of Solid Waste" (39 FR 29337, Aug.

14, 1974) are a useful reference in preparation of this plan. If the facility is to be used to dispose of liquid wastes containing between 50 ppm and 500 ppm PCB, the operations plan must include procedures to determine that liquid PCBs to be disposed of at the landfill do not exceed 500 ppm PCB and measures to prevent the migration of PCBs from the landfill. Bulk liquids not exceeding 500 ppm PCBs may be disposed of provided such waste is pretreated and/or stabilized (e.g., chemically fixed, evaporated, mixed with dry inert absorbant) to reduce its liquid content or increase its solid content so that a non-flowing consistency is achieved to eliminate the presence of free liquids prior to final disposal in a landfill. PCB Container of liquid PCBs with a concentration between 50 and 500 ppm PCB may be disposed of if each container is surrounded by an amount of inert sorbant material capable of absorbing all of the liquid contents of the container.

(iii) Ignitable wastes shall not be disposed of in chemical waste landfills. Liquid ignitable wastes are wastes that have a flash point less than 60 degrees C (140 degrees F) as determined by the following method or an equivalent method: Flash point of liquids shall be determined by a Pensky-Martens Closed Cup Tester, using the protocol specified in ASTM Standard D-93-80, or the Setaflash Closed Tester using the protocol specified in ASTM Standard D-3278-78.

(iv) Records shall be maintained for all PCB disposal operations and shall include information on the PCB concentration in liquid wastes and the three dimensional burial coordinates for PCBs and PCB Items. Additional records shall be developed and maintained as required in § 761.80.

(9) *Supporting facilities.* (i) A six foot woven mesh fence, wall, or similar device shall be placed around the site to prevent unauthorized persons and animals from entering.

(ii) Roads shall be maintained to and within the site which are adequate to support the operation and maintenance of the site without causing safety or nuisance problems or hazardous conditions.

(iii) The site shall be operated and maintained in a manner to prevent safety problems or hazardous conditions resulting from spilled liquids and windblown materials.

(c) *Approval of chemical waste landfills.* Prior to the disposal of any PCBs and PCB Items in a chemical waste landfill, the owner or operator of the landfill shall receive written approval of the Agency Regional Administrator for the Region in which the landfill is located. The approval shall be obtained in the following manner:

(1) *Initial report.* The owner or operator shall submit to the Regional Administrator an initial report which contains:

- (i) The location of the landfill;
- (ii) A detailed description of the landfill including general site plans and design drawings;
- (iii) An engineering report describing the manner in which the landfill complies with the requirements for chemical waste landfills specified in paragraph (b) of this section;
- (iv) Sampling and monitoring equipment and facilities available;
- (v) Expected waste volumes of PCBs;
- (vi) General description of waste materials other than PCBs that are expected to be disposed of in the landfill;
- (vii) Landfill operations plan as required in paragraph (b) of this section;
- (viii) Any local, State, or Federal permits or approvals; and
- (ix) Any schedules or plans for complying with the approval requirements of these regulations.

(2) *Other information.* In addition to the information contained in the report described in paragraph (c)(1) of this section, the Regional Administrator may require the owner or operator to submit any other information that the Regional Administrator finds to be reasonably necessary to determine whether a chemical waste landfill should be approved. Such other information shall be restricted to the types of information required in paragraphs (c)(1) (i) through (ix) of this section.

(3) *Contents of approval.* (i) Except as provided in paragraph (c)(4) of this section the Regional Administrator may not approve a chemical waste landfill for the disposal of PCBs and PCB Items, unless he finds that the

landfill meets all of the requirements of paragraph (b) of this section.

(ii) In addition to the requirements of paragraph (b) of this section, the Regional Administrator may include in an approval any other requirements or provisions that the Regional Administrator finds are necessary to ensure that operation of the chemical waste landfill does not present an unreasonable risk of injury to health or the environment from PCBs. Such provisions may include a fixed period of time for which the approval is valid.

The approval may also include a stipulation that the operator of the chemical waste landfill report to the Regional Administrator any instance when PCBs are detectable during monitoring activities conducted pursuant to paragraph (b)(6) of this section.

(4) *Waivers.* An owner or operator of a chemical waste landfill may submit evidence to the Regional Administrator that operation of the landfill will not present an unreasonable risk of injury to health or the environment from PCBs when one or more of the requirements of paragraph (b) of this section are not met. On the basis of such evidence and any other available information, the Regional Administrator may in his discretion find that one or more of the requirements of paragraph (b) of this section is not necessary to protect against such a risk and may waive the requirements in any approval for that landfill. Any finding and waiver under this paragraph will be stated in writing and included as part of the approval.

(5) *Persons approved.* Any approval will designate the persons who own and who are authorized to operate the chemical waste landfill, and will apply only to such persons, except as provided by paragraph (c)(7) of this section.

(6) *Final approval.* Approval of a chemical waste landfill will be in writing and will be signed by the Regional Administrator. The approval will state all requirements applicable to the approved landfill.

(7) *Transfer of property.* Any person who owns or operates an approved chemical waste landfill must notify EPA at least 30 days before transferring ownership in the property or

transferring the right to conduct the chemical waste landfill operation. The transferor must also submit to EPA, at least 30 days before such transfer, a notarized affidavit signed by the transferee which states that the transferee will abide by the transferor's EPA chemical waste landfill approval. Within 30 days of receiving such notification and affidavit, EPA will issue an amended approval substituting the transferee's name for the transferor's name, or EPA may require the transferee to apply for a new chemical waste landfill approval. In the latter case, the transferee must abide by the transferor's EPA approval until EPA issues the new approval to the transferee.

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605))

[44 FR 31542, May 31, 1979. Redesignated at 47 FR 19527, May 6, 1982, and amended at 48 FR 5730, Feb. 8, 1983; 49 FR 28191, July 10, 1984]

**§ 761.79 Decontamination.**

(a) Any PCB Container to be decontaminated shall be decontaminated by flushing the internal surfaces of the container three times with a solvent containing less than 50 ppm PCB. The solubility of PCBs in the solvent must be five percent or more by weight. Each rinse shall use a volume of the normal diluent equal to approximately ten (10) percent of the PCB Container capacity. The solvent may be reused for decontamination until it contains 50 ppm PCB. The solvent shall then be disposed of as a PCB in accordance with § 761.60(a). Non-liquid PCBs resulting from the decontamination procedures shall be disposed of in accordance with the provisions of § 761.60(a)(4).

(b) Movable equipment used in storage areas shall be decontaminated by swabbing surfaces that have contacted PCBs with a solvent meeting the criteria of paragraph (a) of this section.

NOTE: Precautionary measures should be taken to ensure that the solvent meets safety and health standards as required by applicable Federal regulations.

[44 FR 31542, May 31, 1979. Redesignated at 47 FR 19527, May 6, 1982]

**Subpart E—Exemptions**

**§ 761.80 Manufacturing, processing, and distribution in commerce exemptions.**

(a) The Administrator grants the following petitioners an exemption for one year to distribute in commerce PCB small capacitors for purposes of repair:

(1) Advance Transformer Co., Chicago, IL 60618 (PDE-4).

(2) Air Conditioning Contractors of America, Washington, DC 20036 (PDE-7).

(3) Association of Home Appliance Manufacturers, Chicago, IL 60606 (PDE-26.2).

(4) B & B Motor & Control Corp., New York, NY 10012 (PDE-30).

(5) Complete-Reading Electric Co., Hillside, IL 60162 (PDE-48).

(6) Dunham-Bush, Inc., Harrisonburg, VA 22801 (PDE-71).

(7) Emerson Quiet Kool Corp., Woodbridge, NJ 07095 (PDE-84).

(8) Harry Alter Co., Chicago, IL 60609 (PDE-111).

(9) Minnesota Mining and Manufacturing Co., St. Paul, MN 55133 (PDE-157.1).

(10) Motors & Armatures, Inc., Hauppauge, NY 11788 (PDE-161).

(11) National Association of Electrical Distributors, Stamford, CT 06901 (PDE-163).

(12) National Capacitor Corp., Garden Grove, CA 92641 (PDE-165).

(13) Service Supply Co., Phoenix, AZ 85013 (PDE-237).

(14) Wedzeb Enterprises, Inc., Lebanon, IN 46052 (PDE-297).

(15) Westinghouse Electric Corp., Pittsburgh, PA 15222 (PDE-298).

(b) The Administrator grants the following petitioners an exemption for one year to distribute in commerce PCB equipment containing PCB small capacitors:

(1) Advance Transformer Co., Chicago, IL 60618 (PDE-4).

(2) Coleman Co., Inc., Wichita, KS 67201 (PDE-45.1).

(3) Donn Corp., Westlake, OH 44145 (PDE-63).

(4) Dunham-Bush, Inc., Harrisonburg, VA 22801 (PDE-71).

(5) Emerson Quiet Kool Corp., Woodbridge, NJ 07095 (PDE-84).

(6) Friedrich Air Conditioning & Refrigeration Co., San Antonio, TX 78295 (PDE-93).

(7) Gould, Inc., Electric Motor Division, St. Louis, MO 63166 (PDE-103).

(8) GTE Products Corp., Danvers, MA 01923 (PDE-105).

(9) King-Seeley Thermos Co., Queen Products Division, Albert Lea, MN 56007 (PDE-139).

(10) L.E. Mason Co., Red Dot Division, Boston, MA 02136 (PDE-223).

(11) Minnesota Mining and Manufacturing Co., St. Paul, MN 55133 (PDE-157.3).

(12) National Association of Electrical Distributors, Stamford, CT 06901 (PDE-163).

(13) Royalite Co., Flint, MI 48502 (PDE-231).

(14) Sola Electric, Unit of General Signal, Elk Grove Village, IL 60007 (PDE-246).

(15) Transco, Inc., West Columbia, SC 29169 (PDE-276.1).

(16) Westinghouse Electric Corp., Pittsburgh, PA 15222 (PDE-298).

(c) The Administrator grants the following petitioners an exemption for one year to process PCB small capacitors and PCB equipment containing PCB small capacitors into other equipment and to distribute in commerce that equipment:

(1) Advance Transformer Co., Chicago, IL 60618 (PDE-4).

(2) Gould, Inc., Electric Motor Division, St. Louis, MO 63166 (PDE-103).

(3) GTE Products Corp., Danvers, MA 01923 (PDE-105).

(4) L.E. Mason Co., Red Dot Division, Boston, MA 02136 (PDE-223).

(5) Westinghouse Electric Corp., Pittsburgh, PA 15222 (PDE-298).

(d) The Administrator grants the following petitioners an exemption for one year to process and distribute in commerce PCB-contaminated fluid for purposes of servicing customers' transformers:

(1) Electrical Apparatus Service Association, St. Louis, MO 63132 (PDE-77), except for Ward Transformer Co., Inc.

(2) Ohio Transformer Corp., Louisville, OH 44641 (PDE-173).

(3) T & R Electric Supply Co., Inc., Colman, SD 57017 (PDE-265).

(4) Temco, Inc., Corpus Christi, TX 78410 (PDE-268).

(e) The Administrator grants the following petitioners an exemption for one year to process and distribute in commerce PCB-contaminated fluid in buying and selling used PCB-contaminated transformers:

(1) Electrical Apparatus Service Association, St. Louis, MO 63132 (PDE-77), except for Ward Transformer Co., Inc.

(2) Ohio Transformer Corp., Louisville, OH 44641 (PDE-173).

(3) Temco, Inc., Corpus Christi, TX 78410 (PDE-268).

(f) The Administrator grants the following petitioners an exemption for one year to manufacture small quantities of PCBs for research and development:

(1) California Bionuclear Corp., Sun Valley, CA 91352 (ME-13).

(2) Foxboro Co., North Haven, CT 06473 (ME-6).

(3) ULTRA Scientific, Inc., Hope, RI 02831 (ME-99.1).

(4) Midwest Research Institute, Kansas City, MO 64110 (ME-70.1).

(5) Pathfinder Laboratories, St. Louis, MO 63146 (A division of Sigma Aldridge Corporation, St. Louis, MO, 63178) (ME-76).

(6) Radian Corp., Austin, TX 78766 (ME-81.2).

(7) Wellington Sciences USA, College Station, TX 77840 (ME-104.1).

(g) The Administrator grants a class exemption to all processors and distributors of PCBs in small quantities for research and development provided that the following conditions are met:

(1) All processors and distributors must maintain records of their PCB activities for a period of 5 years.

(2) Any person or company which expects to process or distribute in commerce 100 grams (.22 lb) or more PCBs in 1 year must report to EPA identifying the sites of PCB activities and the quantity of PCBs to be processed or distributed in commerce.

(h) The Administrator grants the following petitioners an exemption for one year to process and distribute in commerce PCBs for use as a mounting medium in microscopy for all purposes:

(1) McCrone Accessories & Components, Division of Walter C. McCrone Associates, Inc., Chicago, IL 60616 (PDE-149).

(2) R.P. Cargille Laboratories, Inc., Cedar Grove, NJ 07009 (PDE-181), provided that petitioner stores the PCBs it processes and distributes in commerce in accordance with the storage for disposal requirements of 40 CFR 761.65(b).

(i) The Administrator grants the following petitioners an exemption for one year to process and distribute in commerce PCBs for use as an immersion oil in low fluorescence microscopy (other than capillary microscopy):

(1) R.P. Cargille Laboratories, Inc., Cedar Grove, NJ 07009 (PDE-181), provided that petitioner stores the PCBs it processes and distributes in commerce in accordance with the storage for disposal requirements of 40 CFR 761.65(b).

(j) The Administrator grants the following petitioners an exemption for one year to process and distribute in commerce small quantities of PCBs for use as an optical liquid:

(1) R.P. Cargille Laboratories, Inc., Cedar Grove, NJ 07009 (PDE-181), provided that petitioner stores the PCBs it processes and distributes in commerce in accordance with the storage for disposal requirements of 40 CFR 761.65(b).

(k) The Administrator grants the following petitioners an exemption for one year to distribute in commerce previously imported and repaired PCB equipment containing PCB small capacitors:

(1) Honeywell, Inc., Waltham, MA 02154 (PDE-119).

(l) The Administrator grants the following petitioners an exemption for one year to import samples of PCB-containing fluid taken from PCB transformers for purposes of testing and analysis:

(1) Dow Corning Corp., Midland, MI 48460 (ME-31.1).

(m) The Administrator grants the following petitioners an exemption for one year to process and export small quantities of PCBs for research and development:

(1) Chem Service, Inc., West Chester, PA 19380 (PDE-41).

(2) Foxboro Co., North Haven, CT 06473 (PDE-21.1).

(3) PolyScience Corp., Niles, IL 60648 (PDE-178).

(4) ULTRA Scientific, Inc., Hope, RI 02831 (PDE-282.1).

(5) Supelco, Inc., Bellefonte, PA 16823-0048 (PDE-41.2).

(6) Radian Corp., Austin, TX 78766 (PDE-182.1).

(n) The 1-year exemption granted to petitioners in paragraphs (f), (g), and (m) of this section shall be renewed automatically unless a petitioner notifies EPA of any increase in the amount of PCBs to be manufactured, imported, or exported or any change in the manner of manufacture, import, or export of PCBs. EPA will consider the submission of such information to be a renewed petition for exemption. EPA will evaluate the information in the renewed exemption petition, issue a proposed rule for public comment, and issue either a final rule granting the exemption or a notice denying the exemption. Until EPA acts on the petition, the petitioner will be allowed to continue the activities for which it requests exemption.

(o) The 1-year class exemption granted to all processors and distributors of PCBs in small quantities for research and development in paragraph (g) of this section shall be renewed automatically unless information is submitted affecting EPA's conclusion that the class exemption, or the activities of any individual or company included in the exemption, will not pose an unreasonable risk of injury to health or the environment. EPA will evaluate the information, issue a proposed rule for public comment, and issue a final rule affecting the class exemption or individuals or companies included in the class exemption. Until EPA issues a final rule, individuals and companies included in the class exemption will be allowed to continue processing and distributing PCBs in small quantities for research and development.

(p) The Administrator grants the following petitioners an exemption for 1 year to import inadvertently generated PCBs at concentrations above those specified for "excluded manufacturing processes" at § 761.3:

(1) American Hoechst Corp., Somerville, NJ 08876 (ME-5).

(i) The exemption is limited to the pigment specified in the American Hoechst petition.

(ii) [Reserved]

(2) [Reserved]

(q) The Administrator grants the following petitioners, and their customers, an exemption for 1 year to process and distribute in commerce inadvertently generated PCBs at concentration above those specified for "excluded manufacturing processes" at § 761.3 provided that the conditions for each exemption are met:

(1) Aluminum Company of America, Pittsburgh, PA 15219 (PDE-13).

(i) The exemption is limited to the sale of 1,116,225 lbs of aluminum chloride for use in the production of pigments.

(ii) The Agency must be notified 30 days prior to delivery if the aluminum chloride is to be sold to a company other than Kemira, Incorporated of Savannah, Georgia.

(2) American Hoechst Corp., Somerville, NJ 08876 (PDE-13).

(i) The petitioner must notify customers that the product may contain PCBs over the 50 ppm maximum concentration level for inadvertently generated PCBs.

(ii) The exemption is limited to the pigment specified in the American Hoechst petition.

(3) Dainichiseika Color & Chemicals America, Inc., Clifton, NJ 07012 (PDE-58).

(i) The petitioners must notify customers that the product contains PCBs over the 50 ppm maximum concentration level for inadvertently generated PCBs.

(ii) The exemption is limited to the 62,400 lbs of phthalocyanine blue crude in Dainichiseika's inventory.

(r) The Administrator grants the following petitioners a 1-year exemption to distribute in commerce heat transfer and hydraulic systems containing less than 50 ppm PCBs, provided that the systems are drained prior to distribution in commerce.

(1) Aluminum Company of America, Pittsburgh, PA 15219.

(2) [Reserved]

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605)

[49 FR 28171, July 10, 1984, as amended at 51 FR 28569, Aug. 8, 1986]

## Subpart F—[Reserved]

## Subpart G—PCB Spill Cleanup Policy

SOURCE: 52 FR 10705, Apr. 2, 1987, unless otherwise noted.

### § 761.120 Scope.

(a) *General.* This policy establishes criteria EPA will use to determine the adequacy of the cleanup of spills resulting from the release of materials containing PCBs at concentrations of 50 ppm or greater. The policy applies to spills which occur after May 4, 1987.

(1) Existing spills (spills which occurred prior to May 4, 1987, are excluded from the scope of this policy for two reasons:

(i) For old spills which have already been discovered, this policy is not intended to require additional cleanup where a party has already cleaned a spill in accordance with requirements imposed by EPA through its regional offices, nor is this policy intended to interfere with ongoing litigation of enforcement actions which bring into issue PCB spills cleanup.

(ii) EPA recognizes that old spills which are discovered after the effective date of this policy will require site-by-site evaluation because of the likelihood that the site involves more pervasive PCB contamination than fresh spills and because old spills are generally more difficult to clean up than fresh spills (particularly on porous surfaces such as concrete). Therefore, spills which occurred before the effective date of this policy are to be decontaminated to requirements established at the discretion of EPA, usually through its regional offices.

(2) EPA expects most PCB spills subject to the TSCA PCB regulations to conform to the typical spill situations considered in developing this policy. This policy does, however, exclude from application of the final numerical cleanup standards certain spill situations from its scope: Spills directly into surface waters, drinking water,

sewers, grazing lands, and vegetable gardens. These types of spills are subject to final cleanup standards to be established at the discretion of the regional office. These spills are, however, subject to the immediate notification requirements and measures to minimize further environmental contamination.

(3) For all other spills, EPA generally expects the decontamination standards of this policy to apply. Occasionally, some small percentage of spills covered by this policy may warrant more stringent cleanup requirements because of additional routes of exposure or significantly greater exposures than those assumed in developing the final cleanup standards of this policy. While the EPA regional offices have the authority to require additional cleanup in these circumstances, the Regional Administrator must first make a finding based on the specific facts of a spill that additional cleanup must occur to prevent unreasonable risk. In addition, before a final decision is made to require additional cleanup, the Regional Administrator must notify the Director, Office of Toxic Substances at Headquarters of his/her finding and the basis for the finding.

(4) There may also be exceptional spill situations that requires less stringent cleanup or a different approach to cleanup because of factors associated with the particular spill. These factors may mitigate expected exposures and risks or make cleanup to these requirements impracticable.

(b) *Spills that may require more stringent cleanup levels.* For spills within the scope of this policy, EPA generally retains, under § 761.135, the authority to require additional cleanup upon finding that, despite good faith efforts by the responsible party, the numerical decontamination levels in the policy have not been met. In addition, EPA foresees the possibility of exceptional spill situations in which site-specific risk factors may warrant additional cleanup to more stringent numerical decontamination levels than are required by the policy. In these situations, the Regional Administrator has the authority to require cleanup to levels lower than those in-

cluded in this policy upon finding that further cleanup must occur to prevent unreasonable risk. The Regional Administrator will consult with the Director, Office of Toxic Substances, prior to making such a finding.

(1) For example, site-specific characteristics, such as short depth to ground water, type of soil, or the presence of a shallow well, may pose exceptionally high potential for ground water contamination by PCBs remaining after cleanup to the standards specified in this policy. Spills that pose such a high degree of potential for ground water contamination have not been excluded from the policy under paragraph (d) of this section because the presence of such potential may not be readily apparent. EPA feels that automatically excluding such spills from the scope of the policy could result in the delay of cleanup—a particularly undesirable outcome if potential ground water contamination is, in fact, a significant concern.

(2) In those situations, the Regional Administrator may require cleanup in addition to that required under § 761.125 (b) and (c). However, the Regional Administrator must first make a finding, based on the specific facts of a spill, that additional cleanup is necessary to prevent unreasonable risk. In addition, before making a final decision on additional cleanup, the Regional Administrator must notify the Director of the Office of Toxic Substances of his finding and the basis for the finding.

(c) *Flexibility to allow less stringent or alternative requirements.* EPA retains the flexibility to allow less stringent or alternative decontamination measures based upon site-specific considerations. EPA will exercise this flexibility if the responsible party demonstrates that cleanup to the numerical decontamination levels is clearly unwarranted because of risk-mitigating factors, that compliance with the procedural requirements or numerical standards in the policy is impracticable at a particular site, or that site-specific characteristics make the costs of cleanup prohibitive. The Regional Administrator will notify the Director of OTS of any decision and

the basis for the decision to allow less stringent cleanup. The purpose of this notification is to enable the Director of OTS to ensure consistency of spill cleanup standards under special circumstances across the regions.

(d) *Excluded spills.* (1) Although the spill situations in paragraphs (d)(2)(i) through (vi) of this section are excluded from the automatic application of final decontamination standards under § 761.125 (b) and (c), the general requirements under § 761.125(a) do apply to these spills. In addition, all of these excluded situations require practicable, immediate actions to contain the area of contamination. While these situations may not always require more stringent cleanup measures, the Agency is excluding these scenarios because they will always involve significant factors that may not be adequately addressed by cleanup standards based upon typical spill characteristics.

(2) For the spill situations in paragraphs (d)(2)(i) through (vi) of this section, the responsible party shall decontaminate the spill in accordance with site-specific requirements established by the EPA regional offices.

(i) Spills that result in the direct contamination of surface waters (surface waters include, but are not limited to, "waters of the United States" as defined in Part 122 of this chapter, ponds, lagoons, wetlands, and storage reservoirs).

(ii) Spills that result in the direct contamination of sewers or sewage treatment systems.

(iii) Spills that result in the direct contamination of any private or public drinking water sources or distribution systems.

(iv) Spills which migrate to and contaminate surface waters, sewers, or drinking water supplies before cleanup has been completed in accordance with this policy.

(v) Spills that contaminate animal grazing lands.

(vi) Spills that contaminate vegetable gardens.

(e) *Relationship of policy to other statutes.* (1) This policy does not affect cleanup standards or requirements for the reporting of spills imposed, or to be imposed, under other Federal statu-

tory authorities, including but not limited to, the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), and the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA). Where more than one requirement applies, the stricter standard must be met.

(2) The Agency recognizes that the existence of this policy will inevitably result in attempts to apply the standards to situations within the scope of other statutory authorities. However, other statutes require the Agency to consider different or alternative factors in determining appropriate corrective actions. In addition, the types and magnitudes of exposures associated with sites requiring corrective action under other statutes often involve important differences from those expected of the typical, electrical equipment-type spills considered in developing this policy. Thus, cleanups under other statutes, such as RCRA corrective actions or remedial and response actions under SARA may result in different outcomes.

#### § 761.123 Definitions.

For purposes of this policy, certain words and phrases are used to denote specific materials, procedures, or circumstances. The following definitions are provided for purposes of clarity and are not to be taken as exhaustive lists of situations and materials covered by the policy.

"Double wash/rinse" means a minimum requirement to cleanse solid surfaces (both impervious and nonimpervious) two times with an appropriate solvent or other material in which PCBs are at least 5 percent soluble (by weight). A volume of PCB-free fluid sufficient to cover the contaminated surface completely must be used in each wash/rinse. The wash/rinse requirement does not mean the mere spreading of solvent or other fluid over the surface, nor does the requirement mean a once-over wipe with a soaked cloth. Precautions must be taken to contain any runoff resulting from the cleansing and to dispose

properly of wastes generated during the cleansing.

"High-concentration PCBs" means PCBs that contain 500 ppm or greater PCBs, or those materials which EPA requires to be assumed to contain 500 ppm or greater PCBs in the absence of testing.

"High-contact industrial surface" means a surface in an industrial setting which is repeatedly touched, often for relatively long periods of time. Manned machinery and control panels are examples of high-contact industrial surfaces. High-contact industrial surfaces are generally of impervious solid material. Examples of low-contact industrial surfaces include ceilings, walls, floors, roofs, roadways and sidewalks in the industrial area, utility poles, unmanned machinery, concrete pads beneath electrical equipment, curbing, exterior structural building components, indoor vaults, and pipes.

"High-contact residential/commercial surface" means a surface in a residential/commercial area which is repeatedly touched, often for relatively long periods of time. Doors, wall areas below 6 feet in height, uncovered flooring, windowsills, fencing, bannisters, stairs, automobiles, and children's play areas such as outdoor patios and sidewalks are examples of high-contact residential/commercial surfaces. Examples of low-contact residential/commercial surfaces include interior ceilings, interior wall areas above 6 feet in height, roofs, asphalt roadways, concrete roadways, wooden utility poles, unmanned machinery, concrete pads beneath electrical equipment, curbing, exterior structural building components (e.g., aluminum/vinyl siding, cinder block, asphalt tiles), and pipes.

"Impervious solid surfaces" means solid surfaces which are nonporous and thus unlikely to absorb spilled PCBs within the short period of time required for cleanup of spills under this policy. Impervious solid surfaces include, but are not limited to, metals, glass, aluminum siding, and enameled or laminated surfaces.

"Low-concentration PCBs" means PCBs that are tested and found to contain less than 500 ppm PCBs, or

those PCB-containing materials which EPA requires to be assumed to be at concentrations below 500 ppm (i.e., untested mineral oil dielectric fluid).

"Nonimpervious solid surfaces" means solid surfaces which are porous and are more likely to absorb spilled PCBs prior to completion of the clean-up requirements prescribed in this policy. Nonimpervious solid surfaces include, but are not limited to, wood, concrete, asphalt, and plasterboard.

"Nonrestricted access areas" means any area other than restricted access, outdoor electrical substations, and other restricted access locations, as defined in this section. In addition to residential/commercial areas, these areas include unrestricted access rural areas (areas of low density development and population where access is uncontrolled by either man-made barriers or naturally occurring barriers, such as rough terrain, mountains, or cliffs).

"Other restricted access (nonsubstation) locations" means areas other than electrical substations that are at least 0.1 kilometer (km) from a residential/commercial area and limited by man-made barriers (e.g., fences and walls) to substantially limited by naturally occurring barriers such as mountains, cliffs, or rough terrain. These areas generally include industrial facilities and extremely remote rural locations. (Areas where access is restricted but are less than 0.1 km from a residential/commercial area are considered to be residential/commercial areas.)

"Outdoor electrical substations" means outdoor, fenced-off, and restricted access areas used in the transmission and/or distribution of electrical power. Outdoor electrical substations restrict public access by being fenced or walled off as defined under § 761.30(1)(1)(ii). For purposes of this TSCA policy, outdoor electrical substations are defined as being located at least 0.1 km from a residential/commercial area. Outdoor fenced-off and restricted access areas used in the transmission and/or distribution of electrical power which are located less than 0.1 km from a residential/commercial area are considered to be residential/commercial areas.

"PCBs" means polychlorinated biphenyls as defined under § 761.3. As specified under § 761.1(b), no requirements may be avoided through dilution of the PCB concentration.

"Requirements and standards" means:

(1) "Requirements" as used in this policy refers to both the procedural responses and numerical decontamination levels set forth in this policy as constituting adequate cleanup of PCBs.

(2) "Standards" refers to the numerical decontamination levels set forth in this policy.

"Residential/commercial areas" means those areas where people live or reside, or where people work in other than manufacturing or farming industries. Residential areas include housing and the property on which housing is located, as well as playgrounds, roadways, sidewalks, parks, and other similar areas within a residential community. Commercial areas are typically accessible to both members of the general public and employees and include public assembly properties, institutional properties, stores, office buildings, and transportation centers.

"Responsible party means the owner of the PCB equipment, facility, or other source of PCBs or his/her designated agent (e.g., a facility manager or foreman).

"Soil" means all vegetation, soils and other ground media, including but not limited to, sand, grass, gravel, and oyster shells. It does not include concrete and asphalt.

"Spill" means both intentional and unintentional spills, leaks, and other uncontrolled discharges where the release results in any quantity of PCBs running off or about to run off the external surface of the equipment or other PCB source, as well as the contamination resulting from those releases. This policy applies to spills of 50 ppm or greater PCBs. The concentration of PCBs spilled is determined by the PCB concentration in the material spilled as opposed to the concentration of PCBs in the material onto which the PCBs were spilled. Where a spill of untested mineral oil occurs, the oil is presumed to contain greater than 50 ppm, but less than 500 ppm

PCBs and is subject to the relevant requirements of this policy.

"Spill area" means the area of soil on which visible traces of the spill can be observed plus a buffer zone of 1 foot beyond the visible traces. Any surface or object (e.g., concrete sidewalk or automobile) within the visible traces area or on which visible traces of the spilled material are observed is included in the spill area. This area represents the minimum area assumed to be contaminated by PCBs in the absence of precleanup sampling data and is thus the minimum area which must be cleaned.

"Spill boundaries" means the actual area of contamination as determined by postcleanup verification sampling or by precleanup sampling to determine actual spill boundaries. EPA can require additional cleanup when necessary to decontaminate all areas within the spill boundaries to the levels required in this policy (e.g., additional cleanup will be required if postcleanup sampling indicates that the area decontaminated by the responsible party, such as the spill area as defined in this section, did not encompass the actual boundaries of PCB contamination).

"Standard wipe test" means, for spills of high-concentration PCBs on solid surfaces, a cleanup to numerical surface standards and sampling by a standard wipe test to verify that the numerical standards have been met. This definition constitutes the minimum requirements for an appropriate wipe testing protocol. A standard-size template (10 centimeters (cm) x 10 cm) will be used to delineate the area of cleanup; the wiping medium will be a gauze pad or glass wool of known size which has been saturated with hexane. It is important that the wipe be performed very quickly after the hexane is exposed to air. EPA strongly recommends that the gauze (or glass wool) be prepared with hexane in the laboratory and that the wiping medium be stored in sealed glass vials until it is used for the wipe test. Further, EPA requires the collection and testing of field blanks and replicates.

[52 FR 10705, Apr. 2, 1987; 52 FR 23397, June 19, 1987]

**§ 761.125 Requirements for PCB spill cleanup.**

(a) *General.* Unless expressly limited, the reporting, disposal, and pre-cleanup sampling requirements in paragraphs (a) (1) through (3) of this section apply to all spills of PCBs at concentrations of 50 ppm or greater which are subject to decontamination requirements under TSCA, including those spills listed under § 761.120(b) which are excluded from the cleanup standards at paragraphs (b) and (c) of this section.

(1) *Reporting requirements.* The reporting in paragraph (a)(1) (i) through (iv) of this section is required in addition to applicable reporting requirements under the Clean Water Act (CWA) or the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA). For example, under the National Contingency Plan all spills involving 10 pounds or more of PCB material must currently be reported to the National Response Center (1-800-424-8802). The requirements in paragraphs (a)(1) (i) through (iv) of this section are designed to be consistent with existing reporting requirements to the extent possible so as to minimize reporting burdens on governments as well as the regulated community.

(i) Where a spill directly contaminates surface water, sewers, or drinking water supplies, as discussed under § 761.120(d), the responsible party shall notify the appropriate EPA regional office (the Office of Pesticides and Toxic Substances Branch) and obtain guidance for appropriate cleanup measures in the shortest possible time after discovery, but in no case later than 24 hours after discovery.

(ii) Where a spill directly contaminates grazing lands or vegetable gardens, as discussed under § 761.120(d), the responsible party shall notify the appropriate EPA regional office (the Office of Pesticides and Toxic Substances Branch) and proceed with the immediate requirements specified under paragraph (b) or (c) of this section, depending on the source of the spill, in the shortest possible time after discovery, but in no case later than 24 hours after discovery.

(iii) Where a spill exceeds 10 pounds of PCB material (generally 1 gallon of PCB dielectric fluid) and is not addressed in paragraph (a)(1) (i) or (ii) of this section, the responsible party will notify the appropriate EPA regional office and proceed to decontaminate the spill area in accordance with this TSCA policy in the shortest possible time after discovery, but in no case later than 24 hours after discovery. For purposes of the notification requirement, the 10 pounds are measured by the weight of the PCB-containing material spilled rather than by the weight of only the PCBs spilled.

(iv) Spills of 10 pounds or less, which are not addressed in paragraph (a)(1) (i) or (ii) of this section, must be cleaned up in accordance with this policy (in order to avoid EPA enforcement liability), but notification of EPA is not required.

(2) *Disposal of cleanup debris and materials.* All concentrated soils, solvents, rags, and other materials resulting from the cleanup of PCBs under this policy shall be properly stored, labeled, and disposed of in accordance with the provisions of § 761.60.

(3) *Determination of spill boundaries in the absence of visible traces.* For spills where there are insufficient visible traces yet there is evidence of a leak or spill, the boundaries of the spill are to be determined by using a statistically based sampling scheme.

(b) *Requirements for cleanup of low-concentration spills which involve less than 1 pound of PCBs by weight (less than 270 gallons of untested mineral oil)—*(1) *Decontamination requirements.* Spills of less than 270 gallons of untested mineral oil, low-concentration PCBs, as defined under § 761.123, which involve less than 1 pound of PCBs by weight (e.g., less than 270 gallons of untested mineral oil containing less than 500 ppm PCBs) shall be cleaned in the following manner:

(i) Solid surfaces must be double washed/rinsed (as defined under § 761.123); except that all indoor, residential surfaces other than vault areas must be cleaned to 10 micrograms per 100 square centimeters (10 µg/100 cm<sup>2</sup>) by standard commercial wipe tests.

(ii) All soil within the spill area (i.e., visible traces of soil and a buffer of 1

lateral foot around the visible traces) must be excavated, and the ground be restored to its original configuration by back-filling with clean soil (i.e., containing less than 1 ppm PCBs).

(iii) Requirements of paragraph (b)(1) (i) and (ii) of this section must be completed within 48 hours after the responsible party was notified or became aware of the spill.

(2) *Effect of emergency or adverse weather.* Completion of cleanup may be delayed beyond 48 hours in case of circumstances including but not limited to, civil emergency, adverse weather conditions, lack of access to the site, and emergency operating conditions. The occurrence of a spill on a weekend or overtime costs are not acceptable reasons to delay response. Completion of cleanup may be delayed only for the duration of the adverse conditions. If the adverse weather conditions, or time lapse due to other emergency, has left insufficient visible traces, the responsible party must use a statistically based sampling scheme to determine the spill boundaries as required under paragraph (a)(3) of this section.

(3) *Records and certification.* At the completion of cleanup, the responsible party shall document the cleanup with records and certification of decontamination. The records and certification must be maintained for a period of 5 years. The records and certification shall consist of the following:

(i) Identification of the source of the spill (e.g., type of equipment).

(ii) Estimated or actual date and time of the spill occurrence.

(iii) The date and time cleanup was completed or terminated (if cleanup was delayed by emergency or adverse weather; the nature and duration of the delay).

(iv) A brief description of the spill location.

(v) Precleanup sampling data used to establish the spill boundaries if required because of insufficient visible traces, and a brief description of the sampling methodology used to establish the spill boundaries.

(vi) A brief description of the solid surfaces cleaned and of the double wash/rinse method used.

(vii) Approximate depth of soil excavation and the amount of soil removed.

(viii) A certification statement signed by the responsible party stating that the cleanup requirements have been met and that the information contained in the record is true to the best of his/her knowledge.

(ix) While not required for compliance with this policy, the following information would be useful if maintained in the records:

(A) Additional pre- or post-cleanup sampling.

(B) The estimated cost of the cleanup by man-hours, dollars, or both.

(c) *Requirements for cleanup of high-concentration spills and low-concentration spills involving 1 pound or more PCBs by weight (270 gallons or more of untested mineral oil).* Cleanup of low-concentration spills involving 1 lb or more PCBs by weight and of all spills of materials other than low-concentration materials shall be considered complete if all of the immediate requirements, cleanup standards, sampling, and recordkeeping requirements of paragraphs (c) (1) through (5) of this section are met.

(1) *Immediate requirements.* The four actions in paragraphs (c)(1) (i) through (iv) of this section must be taken as quickly as possible and within no more than 24 hours (or within 48 hours for PCB Transformers) after the responsible party was notified or became aware of the spill, except that actions described in paragraphs (c)(1) (ii) through (iv) of this section can be delayed beyond 24 hours if circumstances (e.g., civil emergency, hurricane, tornado, or other similar adverse weather conditions, lack of access due to physical impossibility, or emergency operating conditions) so require for the duration of the adverse conditions. The occurrence of a spill on a weekend or overtime costs are not acceptable reasons to delay response. Owners of spilled PCBs who have delayed cleanup because of these types of circumstances must keep records documenting the fact that circumstances precluded rapid response.

(i) The responsible party shall notify the EPA regional office and the NRC

as required by § 761.125(a)(1) or by other applicable statutes.

(ii) The responsible party shall effectively cordon off or otherwise delineate and restrict an area encompassing any visible traces plus a 3-foot buffer and place clearly visible signs advising persons to avoid the area to minimize the spread of contamination as well as the potential for human exposure.

(iii) The responsible party shall record and document the area of visible contamination, noting the extent of the visible trace areas and the center of the visible trace area. If there are no visible traces, the responsible party shall record this fact and contact the regional office of the EPA for guidance in completing statistical sampling of the spill area to establish spill boundaries.

(iv) The responsible party shall initiate cleanup of all visible traces of the fluid on hard surfaces and initiate removal of all visible traces of the spill on soil and other media, such as gravel, sand, oyster shells, etc.

(v) If there has been a delay in reaching the site and there are insufficient visible traces of PCBs remaining at the spill site, the responsible party must estimate (based on the amount of material missing from the equipment or container) the area of the spill and immediately cordon off the area of suspect contamination. The responsible party must then utilize a statistically based sampling scheme to identify the boundaries of the spill area as soon as practicable.

(vi) Although this policy requires certain immediate actions, as described in paragraphs (c)(1)(i) through (iv) of this section, EPA is not placing a time limit on completion of the cleanup effort since the time required for completion will vary from case to case. However, EPA expects that decontamination will be achieved promptly in all cases and will consider promptness of completion in determining whether the responsible party made good faith efforts to clean up in accordance with this policy.

(2) *Requirements for decontaminating spills in outdoor electrical substations.* Spills which occur in outdoor electrical substations, as defined under § 761.123, shall be decontaminated in

accordance with paragraphs (c)(2)(i) and (ii) of this section. Conformance to the cleanup standards under paragraphs (c)(2)(i) and (ii) of this section shall be verified by post-cleanup sampling as specified under § 761.130. At such times as outdoor electrical substations are converted to another use, the spill site shall be cleaned up to the nonrestricted access requirements under paragraph (c)(4) of this section.

(i) Contaminated solid surfaces (both impervious and non-impervious) shall be cleaned to a PCB concentration of 100 micrograms ( $\mu\text{g}$ )/100 square centimeters ( $\text{cm}^2$ ) (as measured by standard wipe tests).

(ii) At the option of the responsible party, soil contaminated by the spill will be cleaned either to 25 ppm PCBs by weight, or to 50 ppm PCBs by weight provided that a label or notice is visibly placed in the area. Upon demonstration by the responsible party that cleanup to 25 ppm or 50 ppm will jeopardize the integrity of the electrical equipment at the substation, the EPA regional office may establish an alternative cleanup method or level and place the responsible party on a reasonably timely schedule for completion of cleanup.

(3) *Requirements for decontaminating spills in other restricted access areas.* Spills which occur in restricted access locations other than outdoor electrical substations, as defined under § 761.123, shall be decontaminated in accordance with paragraph (c)(3)(i) through (v) of this section. Conformance to the cleanup standards in paragraph (c)(3)(i) through (v) of this section shall be verified by postcleanup sampling as specified under § 761.130. At such times as restricted access areas other than outdoor electrical substations are converted to another use, the spill site shall be cleaned up to the nonrestricted access area requirements of paragraph (c)(4) of this section.

(i) High-contact solid surfaces, as defined under § 761.163 shall be cleaned to 10  $\mu\text{g}/100 \text{ cm}^2$  (as measured by standard wipe tests).

(ii) Low-contact, indoor, impervious solid surfaces will be decontaminated to 10  $\mu\text{g}/100 \text{ cm}^2$ .

(iii) At the option of the responsible party, low-contact, indoor, nonimpervious surfaces will be cleaned either to  $10 \mu\text{g}/100 \text{ cm}^2$  or to  $100 \mu\text{g}/100 \text{ cm}^2$  and encapsulated. The Regional Administrator, however, retains the authority to disallow the encapsulation option for a particular spill situation upon finding that the uncertainties associated with that option pose special concerns at that site. That is, the Regional Administrator would not permit encapsulation if he/she determined that if the encapsulation failed the failure would create an imminent hazard at the site.

(iv) Low-contact, outdoor surfaces (both impervious and nonimpervious) shall be cleaned to  $100 \mu\text{g}/100 \text{ cm}^2$ .

(v) Soil contaminated by the spill will be cleaned to 25 ppm PCBs by weight.

(4) *Requirements for decontaminating spills in nonrestricted access areas.* Spills which occur in nonrestricted access locations, as defined under § 761.123, shall be decontaminated in accordance with paragraphs (c)(4)(i) through (v) of this section. Conformance to the cleanup standards at paragraphs (c)(4)(i) through (v) of this section shall be verified by post-cleanup sampling as specified under § 761.130.

(i) Furnishings, toys, and other easily replaceable household items shall be disposed of in accordance with the provisions of § 761.60 and replaced by the responsible party.

(ii) Indoor solid surfaces and high-contact outdoor solid surfaces, defined as high contact residential/commercial surfaces under § 761.123, shall be cleaned to  $10 \mu\text{g}/100 \text{ cm}^2$  (as measured by standard wipe tests).

(iii) Indoor vault areas and low-contact, outdoor, impervious solid surfaces shall be decontaminated to  $10 \mu\text{g}/100 \text{ cm}^2$ .

(iv) At the option of the responsible party, low-contact, outdoor, nonimpervious solid surfaces shall be either cleaned to  $10 \mu\text{g}/100 \text{ cm}^2$  or cleaned to  $100 \mu\text{g}/100 \text{ cm}^2$  and encapsulated. The Regional Administrator, however, retains the authority to disallow the encapsulation option for a particular spill situation upon finding that the uncertainties associated with that

option pose special concerns at that site. That is, the Regional Administrator would not permit encapsulation if he/she determined that if the encapsulation failed the failure would create an imminent hazard at the site.

(v) Soil contaminated by the spill will be decontaminated to 10 ppm PCBs by weight provided that soil is excavated to a minimum depth of 10 inches. The excavated soil will be replaced with clean soil, i.e., containing less than 1 ppm PCBs, and the spill site will be restored (e.g., replacement of turf).

(5) *Records.* The responsible party shall document the cleanup with records of decontamination. The records must be maintained for a period of 5 years. The records and certification shall consist of the following:

(i) Identification of the source of the spill, e.g., type of equipment.

(ii) Estimated or actual date and time of the spill occurrence.

(iii) The date and time cleanup was completed or terminated (if cleanup was delayed by emergency or adverse weather: the nature and duration of the delay).

(iv) A brief description of the spill location and the nature of the materials contaminated. This information should include whether the spill occurred in an outdoor electrical substation, other restricted access location, or in a nonrestricted access area.

(v) Precleanup sampling data used to establish the spill boundaries if required because of insufficient visible traces and a brief description of the sampling methodology used to establish the spill boundaries.

(vi) A brief description of the solid surfaces cleaned.

(vii) Approximate depth of soil excavation and the amount of soil removed.

(viii) Postcleanup verification sampling data and, if not otherwise apparent from the documentation, a brief description of the sampling methodology and analytical technique used.

(ix) While not required for compliance with this policy, information on the estimated cost of cleanup (by man-hours, dollars, or both) would be useful if maintained in the records.

**§ 761.130 Sampling requirements.**

Postcleanup sampling is required to verify the level of cleanup under § 761.125(c) (2) through (4). The responsible party may use any statistically valid, reproducible, sampling scheme (either random samples or grid samples) provided that the requirements of paragraphs (a) and (b) of this section are satisfied.

(a) The sampling area is the greater of (1) an area equal to the area cleaned plus an additional 1-foot boundary, or (2) an area 20 percent larger than the original area of contamination.

(b) The sampling scheme must ensure 95 percent confidence against false positives.

(c) The number of samples must be sufficient to ensure that areas of contamination of a radius of 2 feet or more within the sampling area will be detected, except that the minimum number of samples is 3 and the maximum number of samples is 40.

(d) The sampling scheme must include calculation for expected variability due to analytical error.

(e) EPA recommends the use of a sampling scheme developed by the Midwest Research Institute (MRI) for use in EPA enforcement inspections: "Verification of PCB Spill Cleanup by Sampling and Analysis." Guidance for the use of this sampling scheme is available in the MRI report "Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup." Both the MRI sampling scheme and the guidance document are available from the TSCA Assistance Office, Environmental Protection Agency, Rm. E-543, 401 M St. SW., Washington, DC 20460 (202-554-1404). The major advantage of this sampling scheme is that it is designed to characterize the degree of contamination within the entire sampling area with a high degree of confidence while using fewer samples than any other grid or random sampling scheme. This sampling scheme also allows some sites to be characterized on the basis of composite samples.

(f) EPA may, at its discretion, take samples from any spill site. If EPA's sampling indicates that the remaining concentration level exceeds the required level, EPA will require further

cleanup. For this purpose, the numerical level of cleanup required for spills cleaned in accordance with § 761.125(b) is deemed to be the equivalent of numerical cleanup requirements required for cleanups under § 761.125(c)(2) through (4). Using its best engineering judgment, EPA may sample a statistically valid random or grid sampling technique, or both. When using engineering judgment or random "grab" samples, EPA will take into account that there are limits on the power of a grab sample to dispute statistically based sampling of the type required of the responsible party. EPA headquarters will provide guidance to the EPA regions on the degree of certainty associated with various grab sample results.

**§ 761.135 Effect of compliance with this policy and enforcement.**

(a) Although a spill of material containing 50 ppm or greater PCBs is considered improper PCB disposal, this policy establishes requirements that EPA considers to be adequate cleanup of the spilled PCBs. Cleanup in accordance with this policy means compliance with the procedural as well as the numerical requirements of this policy. Compliance with this policy creates a presumption against both enforcement action for penalties and the need for further cleanup under TSCA. The Agency reserves the right, however, to initiate appropriate action to compel cleanup where, upon review of the records of cleanup or EPA sampling following cleanup, EPA finds that the decontamination levels in the policy have not been achieved. The Agency also reserves the right to seek penalties where the Agency believes that the responsible party has not made a good faith effort to comply with all provisions of this policy, such as prompt notification of EPA of a spill, recordkeeping, etc.

(b) EPA's exercise of enforcement discretion does not preclude enforcement action under other provisions of TSCA or any other Federal statute. This includes, even in cases where the numerical decontamination levels set forth in this policy have been met, civil or criminal action for penalties

where EPA believes the spill to have been the result of gross negligence or knowing violation.

### Subparts H and I [Reserved]

### Subpart J—Records and Reports

#### § 761.180 Records and monitoring.

This section contains recordkeeping and reporting requirements that apply to PCBs, PCB Items, and PCB storage and disposal facilities that are subject to the requirements of the part.

(a) *PCBs and PCB Items in service or projected for disposal.* Beginning July 2, 1978, each owner or operator of a facility using or storing at one time at least 45 kilograms (99.4 pounds) of PCBs contained in PCB Container(s) or one or more PCB Transformers, or 50 or more PCB Large High or Low Voltage Capacitors shall develop and maintain records on the disposition of PCBs and PCB Items. These records shall form the basis of an annual document prepared for each facility by July 1 covering the previous calendar year. Owners or operators with one or more facilities that use or store PCBs and PCB Items in the quantities described above may maintain the records and documents at one of the facilities that is normally occupied for 8 hours a day, provided the identity of this facility is available at each facility using or storing PCBs and PCB Items. The records and documents shall be maintained for at least five years after the facility ceases using or storing PCBs and PCB Items in the prescribed quantities. The following information for each facility shall be included in the annual document:

(1) The dates when PCBs and PCB Items are removed from service, are placed into storage for disposal, and are placed into transport for disposal. The quantities of the PCBs and PCB Items shall be indicated using the following breakdown:

(i) Total weight in kilograms of any PCBs and PCB Items in PCB Containers including the identification of container contents such as liquids and capacitors;

(ii) Total number of PCB Transformers and total weight in kilograms

of any PCBs contained in the transformers; and

(iii) Total number of PCB Large High or Low Voltage Capacitors.

(2) For PCBs and PCB Items removed from service, the location of the initial disposal or storage facility and the name of the owner or operator of the facility.

(3) Total quantities of PCBs and PCB Items remaining in service at the end of the calendar year using the following breakdown:

(i) Total weight in kilograms of any PCBs and PCB Items in PCB Containers, including the identification of container contents such as liquids and capacitors;

(ii) Total number of PCB Transformers and total weight in kilograms of any PCBs contained in the transformers; and

(iii) Total number of PCB Large High or Low Voltage Capacitors.

(b) *Disposal and storage facilities.* Each owner or operator of a facility (including high efficiency boiler operations) used for the storage or disposal of PCBs and PCB Items shall by July 1, 1979 and each July 1 thereafter prepare and maintain a document that includes the information required in paragraphs (b)(1) through (4) of this section for PCBs and PCB Items that were handled at the facility during the previous calendar year. The document shall be retained at each facility for at least 5 years after the facility is no longer used for the storage or disposal of PCBs and PCB Items except that in the case of chemical waste landfills, the document shall be maintained at least 20 years after the chemical waste landfill is no longer used for the disposal of PCBs and PCB Items. The documents shall be available at the facility for inspection by authorized representatives of the Environmental Protection Agency. If the facility ceases to be used for PCB storage or disposal, the owner or operator of such facility shall notify within 60 days the EPA Regional Administrator of the region in which the facility is located that the facility has ceased storage or disposal operations. The notice shall specify where the documents that are required to be maintained by this paragraph are located.

The following information shall be included in each document:

(1) The date when any PCBs and PCB Items were received by the facility during the previous calendar year for storage or disposal, and identification of the facility and the owner or operator of the facility from whom the PCBs were received;

(2) The date when any PCBs and PCB Items were disposed of at the disposal facility or transferred to another disposal or storage facility, including the identification of the specific types of PCBs and PCB Items that were stored or disposed of;

(3) A summary of the total weight in kilograms of PCBs and PCB Articles in containers and the total weight of PCBs contained in PCB Transformers, that have been handled at the facility during the previous calendar year. This summary shall provide totals of the above PCBs and PCB Items which have been:

(i) Received during the year;

(ii) Transferred to other facilities during the year; and

(iii) Retained at the facility at the end of the year. In addition the contents of PCB Containers shall be identified. When PCB Containers and PCBs contained in a transformer are transferred to other storage or disposal facilities, the identification of the facility to which such PCBs and PCB Items were transferred shall be included in the document.

(4) Total number of any PCB Articles or PCB Equipment not in PCB Containers, received during the calendar year, transferred to other storage or disposal facilities during the calendar year, or remaining on the facility site at the end of the calendar year. The identification of the specific types of PCB Articles and PCB Equipment received, transferred, or remaining on the facility site shall be indicated. When PCB Articles and PCB Equipment are transferred to other storage or disposal facilities, the identification of the facility to which the PCB Articles and PCB Equipment were transferred must be included.

NOTE: Any requirements for weights in kilograms of PCBs may be calculated values if the internal volume of containers and transformers is known and included in the

reports, together with any assumptions on the density of the PCBs contained in the containers or transformers.

(c) *Incineration facilities.* Each owner or operator of a PCB incinerator facility shall collect and maintain for a period of 5 years from the date of collection the following information, in addition to the information required in paragraph (b) of this section:

(1) When PCBs are being incinerated, the following continuous and short-interval data:

(i) Rate and quantity of PCBs fed to the combustion system as required in § 761.70(a)(3);

(ii) Temperature of the combustion process as required in § 761.70(a)(4); and

(iii) Stack emission product to include O<sub>2</sub>, CO, and CO<sub>2</sub> as required in § 761.70(a)(7).

(2) When PCBs are being incinerated, data and records on the monitoring of stack emissions as required in § 761.70(a)(6).

(3) Total weight in kilograms of any solid residues generated by the incineration of PCBs and PCB Items during the calendar year, the total weight in kilograms of any solid residues disposed of by the facility in chemical waste landfills, and the total weight in kilograms of any solid residues remaining on the facility site.

(4) When PCBs and PCB Items are being incinerated, additional periodic data shall be collected and maintained as specified by the Regional Administrator pursuant to § 761.70(d)(4).

(5) Upon any suspension of the operation of any incinerator pursuant to § 761.70(a)(8), the owner or operator of such an incinerator shall prepare a document. The document shall, at a minimum, include the date and time of the suspension and an explanation of the circumstances causing the suspension of operation. The document shall be sent to the appropriate Regional Administrator within 30 days of any such suspension.

(d) *Chemical waste landfill facilities.* Each owner or operator of a PCB chemical waste landfill facility shall collect and maintain until at least 20 years after the chemical waste landfill is no longer used for the disposal of

PCBs the following information in addition to the information required in paragraph (b) of this section:

(1) Any water analysis obtained in compliance with § 761.75(b)(6)(iii); and

(2) Any operations records including burial coordinates of wastes obtained in compliance with § 761.75(b)(8)(ii).

(e) *High efficiency boiler facilities.* Each owner or operator of a high efficiency boiler used for the disposal of liquids between 50 and 500 ppm PCB shall collect and maintain for a period of 5 years the following information, in addition to the information required in paragraph (b) of this section:

(1) For each month PCBs are burned in the boiler the carbon monoxide and excess oxygen data required in § 761.60(a)(2)(iii)(A)(8) and § 761.60(a)(3)(iii)(A)(8);

(2) The quantity of PCBs burned each month as required in § 761.60(a)(2)(iii)(A)(7) and § 761.60(a)(3)(iii)(A)(7); and

(3) For each month PCBs (other than mineral oil dielectric fluid) are burned, chemical analysis data of the waste as required in § 761.60(a)(3)(iii)(B)(6).

(f) *Retention of special records by storage and disposal facilities.* In addition to the information required to be maintained under paragraphs (b), (c), (d) and (e) of this section, each owner or operator of a PCB storage or disposal facility (including high efficiency boiler operations) shall collect and maintain for the time period specified in paragraph (b) of this section the following data:

(1) All documents, correspondence, and data that have been provided to the owner or operator of the facility by any State or local government agency and that pertain to the storage or disposal of PCBs and PCB Items at the facility.

(2) All documents, correspondence, and data that have been provided by the owner or operator of the facility to any State or local government agency and that pertain to the storage or disposal of PCBs and PCB Items at the facility.

(3) Any applications and related correspondence sent by the owner or operator of the facility to any local, State, or Federal authorities in regard

to waste water discharge permits, solid waste permits, building permits, or other permits or authorizations such as those required by §§ 761.70(d) and 761.41(c).

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605)

[44 FR 31542, May 31, 1979. Redesignated at 47 FR 19527, May 6, 1982, and 47 FR 37360, Aug. 25, 1982; 49 FR 28191, July 10, 1984]

**§ 761.185 Certification program and retention of records by importers and persons generating PCBs in excluded manufacturing processes.**

(a) In addition to meeting the basic requirements of § 761.1(f) and the definition of excluded manufacturing processes at § 761.3, manufacturers with processes inadvertently generating PCBs and importers of products containing inadvertently generated PCBs must report to EPA any excluded manufacturing process or imports for which the concentration of PCBs in products leaving the manufacturing site or imported is greater than 2 micrograms per gram (2 µg/g, roughly 2 ppm) for any resolvable gas chromatographic peak. Such reports must be filed by October 1, 1984 or, if no processes or imports require reports at the time, within 90 days of having processes or imports for which such reports are required.

(b) Manufacturers required to report by paragraph (a) of this section must transmit a letter notifying EPA of the number, the type, and the location of excluded manufacturing processes in which PCBs are generated when the PCB level in products leaving any manufacturing site is greater than 2 µg/g for any resolvable gas chromatographic peak. Importers required to report by paragraph (a) of this section must transmit a letter notifying EPA of the concentration of PCBs in imported products when the PCB concentration of products being imported is greater than 2 µg/g for any resolvable gas chromatographic peak. Persons must also certify the following:

(1) Their compliance with all applicable requirements of § 761.1(f), including any applicable requirements for air and water releases and process waste disposal.

(2) Whether determinations of compliance are based on actual monitoring of PCB levels or on theoretical assessments.

(3) That such determinations of compliance are being maintained.

(4) If the determination of compliance is based on a theoretical assessment, the letter must also notify EPA of the estimated PCB concentration levels generated and released.

(c) Any person who reports pursuant to paragraph (a) of this section:

(1) Must have performed either a theoretical analysis or actual monitoring of PCB concentrations.

(2) Must maintain for a period of three years after ceasing process operations or importation, or for seven years, whichever is shorter, records containing the following information:

(i) *Theoretical analysis.* Manufacturers records must include: the reaction or reactions believed to be generating PCBs; the levels of PCBs generated; and the levels of PCBs released. Importers records must include: the reaction or reactions believed to be generating PCBs and the levels of PCBs generated; the basis for all estimations of PCB concentrations; and the name and qualifications of the person or persons performing the theoretical analysis; or

(ii) *Actual monitoring.* (A) The method of analysis.

(B) The results of the analysis, including data from the Quality Assurance Plan.

(C) Description of the sample matrix.

(D) The name of the analyst or analysts.

(E) The date and time of the analysis.

(F) Numbers for the lots from which the samples are taken.

(d) The certification required by paragraph (b) of this section must be signed by a responsible corporate officer. This certification must be maintained by each facility or importer for a period of three years after ceasing process operation or importation, or for seven years, whichever is shorter, and must be made available to EPA upon request. For the purpose of this section, a responsible corporate officer means:

(1) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation.

(2) The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25,000,000 (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(e) Any person signing a document under paragraph (d) of this section shall also make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate information. Based on my inquiry of the person or persons directly responsible for gathering information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for falsifying information, including the possibility of fines and imprisonment for knowing violations.

Dated: \_\_\_\_\_

Signature: \_\_\_\_\_

(f) This report must be submitted to the U.S. Environmental Protection Agency, Document Processing Center, P.O. Box 2070, Rockville, MD 20852, Attention: PCB Notification. This report must be submitted by October 1, 1984 or within 90 days of starting up processes or commencing importation of PCBs.

(g) This certification process must be repeated whenever process conditions are significantly modified to make the previous certification no longer valid.

(Approved by the Office of Management and Budget under control number 2070-0008)

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605)

[49 FR 28191, July 10, 1984; 49 FR 33019, Aug. 20, 1984]

§ 761.187 Reporting importers and by persons generating PCBs in excluded manufacturing processes.

In addition to meeting the basic requirements of § 761.1(f) and the definition of excluded manufacturing process at § 761.3, PCB-generating manufacturing processes or importers of PCB-containing products shall be considered "excluded manufacturing processes" only when the following conditions are met:

(a) Data are reported to the EPA by the owner/operator or importer concerning the total quantity of PCBs in product from excluded manufacturing processes leaving any manufacturing site in any calendar year when such quantity exceeds 0.0025 percent of that site's rated capacity for such manufacturing processes as of October 1, 1984; or the total quantity of PCBs imported in any calendar year when such quantity exceeds 0.0025 percent of the average total quantity of such product containing PCBs imported by such importer during the years 1978, 1979, 1980, 1981 and 1982.

(b) Data are reported to the EPA by the owner/operator concerning the total quantity of inadvertently generated PCBs released to the air from excluded manufacturing processes at any manufacturing site in any calendar year when such quantity exceeds 10 pounds.

(c) Data are reported to the EPA by the owner/operator concerning the total quantity of inadvertently generated PCBs released to water from excluded manufacturing processes from any manufacturing site in any calendar year when such quantity exceeds 10 pounds.

(d) These reports must be submitted to the U.S. Environmental Protection Agency, Document Processing Center, P.O. Box 2070, Rockville, Maryland 20852, Attention: PCB Notification.

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605))

(Approved by the Office of Management and Budget under control number 2070-0008)

[49 FR 28192, July 10, 1984]

§ 761.193 Maintenance of monitoring records by persons who import, manufacture, process, distribute in commerce, or use chemicals containing inadvertently generated PCBs.

(a) Persons who import, manufacture, process, distribute in commerce, or use chemicals containing PCBs present as a result of inadvertent generation or recycling who perform any actual monitoring of PCB concentrations must maintain records of any such monitoring for a period of three years after a process ceases operation or importing ceases, or for seven years, whichever is shorter.

(b) Monitoring records maintained pursuant to paragraph (a) of this section must contain:

- (1) The method of analysis.
- (2) The results of the analysis, including data from the Quality Assurance Plan.
- (3) Description of the sample matrix.
- (4) The name of the analyst or analysts.
- (5) The date and time of the analysis.
- (6) Numbers for the lots from which the samples are taken.

(Approved by the Office of Management and Budget under control number 2070-0008)

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605))

[49 FR 28193, July 10, 1984]



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION 5**

**230 SOUTH DEARBORN ST.**

**CHICAGO, ILLINOIS 60604**

REPLY TO THE ATTENTION OF:

5SPT-7

DEC 12 1989

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Leslie M. Sturgeon  
Registered Agent for:  
Waldorf Corporation  
177 Angell Street  
Battle Creek, Michigan 49017

Re: Complaint and Notice of  
Opportunity for Hearing  
Waldorf Corporation

Dear Mr. Sturgeon:

Enclosed please find a Complaint and Notice of Opportunity for Hearing concerning violations of the Toxic Substances Control Act (TSCA), 15 U.S.C. Section 2601 et seq., discovered by a United States Environmental Protection Agency inspector at the Waldorf Corporation, 177 Angell Street, Battle Creek, Michigan.

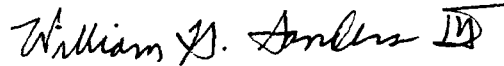
I recommend that you carefully read and analyze the enclosed Complaint and Rules of Practice, 40 C.F.R. Part 22, to determine the alternatives available in responding to the alleged violations, proposed penalties and opportunity for a hearing. Please note that each day the violations cited herein continue constitutes a new violation for which additional penalties may be imposed.

If the Waldorf Corporation chooses to request a hearing to contest the facts alleged in the Complaint, an Answer and Request for Hearing is required to be filed with the Regional Hearing Clerk within the prescribed time limit of twenty (20) days following service of this Complaint. A copy of your Answer and Request for Hearing should be sent to Jennifer Costanza, Assistant Regional Counsel, Office of Regional Counsel (5CA-TUB-3), U.S. Environmental Protection Agency, Region V, 230 South Dearborn Street, Chicago, Illinois 60604. Ms. Costanza's telephone number is (312) 886-6729.

Failure to respond to this Complaint and Notice of Opportunity for Hearing by specific answer within twenty (20) days of your receipt of this Complaint constitutes your admission of the allegations made in the Complaint. Such failure shall result in the issuance of a Default Order imposing the penalties proposed herein without further proceedings.

Whether or not you request a hearing, an informal conference may be requested in order to discuss the facts of this case and to arrive at a settlement. If you have any questions about this matter or desire to request an informal conference for the purpose of settlement, please write to Terence Bonace, PCB Control Section (5SPT-7), U.S. Environmental Protection Agency, 230 South Dearborn Street, Chicago, Illinois 60604, or you may telephone him at (312) 886-6219.

Sincerely yours,

A handwritten signature in cursive script, reading "William H. Sanders III". The signature is written in dark ink and includes a stylized flourish at the end.

William H. Sanders III, P.E.  
Director, Environmental Sciences Division

Enclosures

CERTIFICATE OF SERVICE

This is to certify that the ORIGINAL and ONE COPY of this complaint and Notice of Opportunity for Hearing was filed with the Regional Hearing Clerk on 12/07/89 and that a true and correct copy was mailed with the Consolidated Rules of Practice to Respondent at:


Leslie M. Sturgeon

Registered Agent for:

Waldorf Corporation

177 Angell Street

Battle Creek, MI 49017

 12/12/89  
Glynda Johnson  
Pesticides and Toxic Substances Branch  
U.S. Environmental Protection Agency  
Chicago, Illinois 60604

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION V

IN RE:

WALDORF CORPORATION  
BATTLE CREEK, MICHIGAN

Respondent.

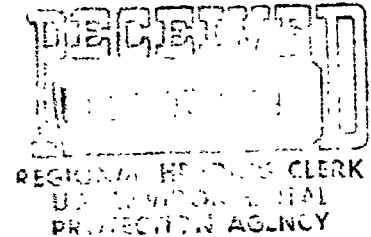
Docket No. TSCA-V-C-

TSCA-V-C- 08 '90

COMPLAINT  
and  
NOTICE OF OPPORTUNITY FOR HEARING

I

COMPLAINT  
GENERAL ALLEGATIONS



1. This is a civil administrative action instituted pursuant to Section 16(a) of the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq. ("TSCA"), 15 U.S.C. §2615(a) and Sections 22.01(a)(5) and 22.13 of the Consolidated Rules of Practice Governing the Administrative Assessment of Civil Penalties and the Revocation or Suspension of Permits, 40 C.F.R. §§22.01(a)(5), 22.13.

2. The Complainant is, by lawful delegation, the Director, Environmental Sciences Division, Region V, United States Environmental Protection Agency ("U.S. EPA").

3. The Respondent is Waldorf Corporation, which is and was at all times relevant to this Complaint, a corporation incorporated under the laws of the State of Delaware, with a place of business at 177 Angell Street, Battle Creek, Michigan.

4. The Polychlorinated Biphenyls ("PCBs") Disposal and Marking regulations were lawfully promulgated pursuant to Section 6 of TSCA, 15 U.S.C. Section 2605, on February 17, 1978 (43 Fed. Reg. 7150). The PCBs Manufacturing, Processing, Distribution in Commerce and Use regulations ("PCB rule") were lawfully promulgated on May 31, 1979 (44 Fed. Reg. 31514), and incorporated the Disposal and Marking regulations. The PCB rule was subsequently amended and partially recodified at 40 C.F.R. Part 761.

5. Respondent is a "person" as defined in 40 C.F.R. §761.3 and is subject to the prohibitions set forth in 40 C.F.R. Part 761.

6. Respondent is the owner and operator of the facility located at 177 Angell Street, Battle Creek, Michigan.

7. On July 27, 1989, representatives of the U.S. EPA inspected Respondent's facility located at Battle Creek, Michigan, to determine compliance with the PCB rule.

8. At the time of the inspection, Respondent had seven PCB transformers.

9. Respondent's PCB transformers are PCB items as defined in 40 C.F.R. §761.3.

COUNT I

10. The General Allegations of the Complaint are incorporated by reference as though set forth here in full.

11. 40 C.F.R. §761.180(a) requires, inter alia, that each owner or operator of a facility using or storing at one time at least 45 kilograms of PCBs contained in PCB container(s), or one or more PCB transformers, or 50 or more PCB capacitors develop and maintain records on the disposition of PCBs and PCB items. These records shall form the basis of annual PCB documents, prepared by each facility by July 1, covering the previous calendar year. Respondent was required to comply with the recordkeeping parts of the PCB rule beginning July 2, 1978, 43 Fed. Reg. 7150 (Feb. 17, 1978).

12. At the time of the inspection, Respondent had not developed and maintained complete annual records on the disposition of its PCB items for calendar years 1985 to 1988. Respondent's failure to develop and maintain PCB records constitutes a violation of 40 C.F.R. §761.180(a) and of Section 15 of TSCA, 15 U.S.C. §2614.

#### COUNT II

13. The General Allegations of the Complaint are incorporated by reference as though set forth here in full.✓

14. 40 C.F.R. §761.30(a)(1)(vi) requires that PCB transformers be registered with fire response personnel with primary jurisdiction by December 1, 1985. ✓

15. Respondent failed to register its seven PCB transformers with fire response personnel with primary jurisdiction by December 1, 1985. ✓

16. 40 C.F.R. §761.30(a)(1)(viii) requires that combustible materials not be stored within a PCB transformer enclosure, within 5 meters of a PCB transformer enclosure, or, if unenclosed, within 5 meters of a PCB transformer.

17. Respondent stored combustible materials within 5 meters of its seven PCB transformers.

18. Respondent's failure to register its seven PCB transformers with fire response personnel by December 1, 1985 and to remove combustible materials from within 5 meters of its seven PCB transformers constitutes violations of 40 C.F.R. §761.30(a)(1)(vi) and (viii) and of Section 15 of TSCA, 15 U.S.C. §2614.

COUNT III

19. The General Allegations of the Complaint are incorporated by reference as though set forth here in full.

20. 40 C.F.R. §761.40(j) requires that, as of December 1, 1985, the vault door, machinery room door, fence, hallway, or means of access to a PCB transformer be marked with the PCB label as described in 40 C.F.R. §761.45(a).

21. Respondent failed to mark the means of access to its seven PCB transformers. Respondent's failure to mark the means of access to its seven PCB

transformers constitutes a violation of 40 C.F.R. §761.40(j) and of Section 15 of TSCA, 15 U.S.C. §2614. ✓

II

PROPOSED CIVIL PENALTY

Section 16 of TSCA, 15 U.S.C. §2615, authorizes the assessment of a civil penalty of up to \$25,000 per day for each violation of TSCA. Based upon the facts alleged in Part I of this Complaint, and upon the nature, circumstances, extent and gravity of the violations alleged, as well as Respondent's history of prior such violations of TSCA, the degree of culpability, and such other matters as justice may require, Complainant proposes that Respondent be assessed the following civil penalty for the violations alleged in this ✓ Complaint:

COUNT I

Improper Recordkeeping ..... \$10,000

15 U.S.C. §2614  
40 C.F.R. §761.180(a)

COUNT II

Improper Use ..... \$20,000

15 U.S.C. §2614  
40 C.F.R. §761.30(a)(1)

COUNT III

Improper Marking ..... \$15,000

15 U.S.C. §2614  
40 C.F.R. §761.40(j)

TOTAL PENALTY ..... \$45,000

Respondent may pay this penalty by certified or cashier's check, payable to "Treasurer, the United States of America," and remitted to:

U.S. Environmental Protection Agency, Region V  
P.O. Box 70753  
Chicago, Illinois 60673

A copy of the check shall be sent to:

Branch Secretary  
Pesticides and Toxic Substances Branch (5SPT-7)  
U.S. Environmental Protection Agency  
230 South Dearborn Street  
Chicago, Illinois 60604

A transmittal letter identifying this Complaint shall accompany the remittance and the copy of the check.

The penalties proposed in Part II of this Complaint were derived by applying the factors enumerated above to the particular allegations that constitute the violations charged in this action. The reasoning for each assessment is explained in detail in the "Guidelines for Assessment of Civil Penalties Under Section 16 of the Toxic Substances Control Act; PCB Penalty Policy," which appears in the Federal Register of September 10, 1980, at 45 Fed. Reg. 59770.

### III

#### OPPORTUNITY TO REQUEST A HEARING

As provided in TSCA Section 16(a), and in accordance with the Administrative Procedure Act, 5 U.S.C. §§552 et seq., you have the right to request a hearing regarding the proposed Complaint, to contest any material fact contained in this Complaint, and/or to contest the appropriateness of the amount of the proposed penalty. If you wish to avoid being found in default, you must file a written Answer to this Complaint and a Request for Hearing with the Regional Hearing Clerk, (5MFA-14), U.S. Environmental

Protection Agency, Region V, 230 South Dearborn Street, Chicago, Illinois 60604, within twenty (20) days of service of this Complaint. The Answer must clearly and directly admit, deny or explain each of the factual allegations contained in the Complaint with respect to which Respondent has any knowledge, or clearly state that Respondent has no knowledge as to particular factual allegations in the Complaint. The Answer shall also state:

1. The circumstances or arguments that are  
alleged to constitute the grounds of defense; and
2. The facts which Respondent intends to place at issue.

The denial of any material fact or the raising of any affirmative defense shall be construed as a request for a hearing. Failure to deny any of the factual allegations in this Complaint constitutes admission of the undenied allegations. A copy of this Answer and any subsequent documents filed in this action should be sent to Jennifer Costanza, Assistant Regional Counsel, Office of Regional Counsel (5CA-TUB-3), U.S. Environmental Protection Agency, 230 South Dearborn Street, Chicago, Illinois 60604. Ms. Costanza may be telephoned at (312) 886-6729.

Any hearing that you request will be held and conducted in accordance with the provisions of the Administrative Procedure Act, 5 U.S.C. §§552 et seq. and the "Consolidated Rules of Practice Governing the Administrative Assessment of Civil Penalties and the Revocation or Suspension of Permits," 40 C.F.R. Part 22. A copy of these rules accompanies this Complaint.

If you fail to file a written Answer and Request for Hearing within twenty (20) days of service of this Complaint, a Default Order may be issued by the Regional Administrator. Your default constitutes a binding admission of all allegations made in the Complaint and a waiver of your right to a hearing under TSCA. The civil penalty proposed herein shall then become due and payable without further proceedings. Such Default Order is not subject to review in any court. In addition, the default penalty is subject to the provisions relating to imposition of interest, penalty and handling charges set forth in TSCA, 15 U.S.C. §2615(a)(4), and the Federal Claims Collection Act of 1966, 31 U.S.C. §3717. Interest will accrue on the default penalty at the rate established by the Secretary of the Treasury pursuant to 31 U.S.C. Section 3717. A late payment handling charge of \$20.00 will be imposed after thirty (30) days, with an additional charge of \$10.00 for each subsequent 30-day period over which an unpaid balance remains. In addition, a six percent per annum penalty will be applied on any principal amount not paid within ninety (90) days of the date that the Default Order is signed by the Regional Administrator.

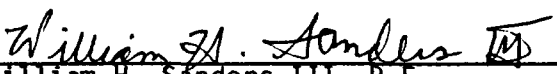
#### IV

##### SETTLEMENT CONFERENCE

Whether or not you request a hearing, an informal conference may be requested in order to discuss the facts of this case and to arrive at a settlement. To request a settlement conference, please write to Terence Bonace, PCB Control Section (5SPT-7), United States Environmental Protection Agency, Region V, 230 South Dearborn Street, Chicago, Illinois 60604, or telephone him at (312) 886-6219.

Please note that your request for an informal settlement conference does not extend the twenty (20) day period during which you must submit a written Answer and Request for Hearing. You may pursue the informal conference procedure, however, simultaneously with the adjudicatory hearing procedure.

U.S. EPA encourages all parties against whom a civil penalty is proposed to pursue the possibilities of settlement through an informal conference. However, U.S. EPA will not reduce the penalty simply because such a conference is held. Any settlement that may be reached as a result of such conference shall be embodied in a written Consent Agreement and Final Order issued by the Regional Administrator, U.S. EPA, Region V. The issuance of such a Consent Agreement shall constitute a waiver of your right to request a hearing on any matter stipulated to therein.

  
\_\_\_\_\_  
William H. Sanders III, P.E.  
Director, Environmental Sciences Division  
U.S. Environmental Protection Agency  
Region V  
Chicago, Illinois 60604

Dated: 12/5/89